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THE ROUTE OF ASIATIC CHOLERA IN 1892.

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In the short paper which I have ventured to undertake to read on the subject of cholera, I shall confine my remarks to certain points as to the mode of spread of the present epidemic. The literature of cholera is enormous in amount, and most heterogeneous in character; it ranges from the portly folios issued by the Indian Government, to the telegrams in yesterday's newspapers—the one elaborate and authoritative, but published a year or longer after the event, the other prompt indeed, but either founded on popular rumor or on official statistics which are not always entirely trustworthy. Municipal, and sometimes, it is possible, even State authorities appear to consider that they are serving their own interests by concealing facts as to the existence and progress of epidemic disease. Such concealment is seldom successful for more than a very limited period, and in its ultimate effects on the commerce of the country, and the public health of other nations, as disastrous as it is disingenuous.

Even so much information as is made public abroad is only to be obtained in England through non-official channels. The Government of this country, though from several points of view more interested than any others, and possessing unrivalled opportunities, has no machinery by which it can gather and compare facts as to the progress of epidemics abroad. British ships may sail for infected ports, and, as was recently the case at Santos during the epidemic of yellow fever there, the mortality among the crews on arrival may be so great that the vessels are unable to return, yet it is only after the facts have become matters of public notoriety and scandal that Government Department issues tardy notices warning ship owners of the damage.

The *Comité Consultatif d'Hygiene* of France has earlier and better information as to the movements of Asiatic cholera than can be gathered in this country, and the United States has from time to time obtained special reports from its Consuls on the existence and progress of epidemic diseases. There is not in this country any public officer or department whose duty it is to deal with questions of public health as they affect the relations of the United Kingdom with its colonies and dependencies, and with foreign countries. The Local Government Board is concerned only with internal administration in England, and neither the Foreign Office nor the Board of Trade have been provided with the necessary medical advisers. It appears to be highly desirable that our Consuls abroad should be instructed to report promptly the presence of such epidemic diseases as cholera, yellow fever, small-pox and plague, and such reports, after being epitomized by an officer appointed for the purpose, should be placed at the disposal of the public either by means of notifications in the *Gazette*, or by being communicated directly to the public press in the same way as the daily notices of the Meteorological Office are now issued.

For tracing the progress of the present epidemic of cholera it does not appear to me to be necessary to include a consideration of the occurrence of the disease last year in Syria, or its recrudescence this summer. There is no evidence of any spread from Syria, either northward or westward; on the contrary all the evidence goes to prove that Asiatic cholera reached European Russia this year by a track differing altogether from those followed during the last half century, though nearly approaching the route taken by the earliest epidemics which reached this country. Speaking broadly, Asiatic cholera has followed three main routes from India to western Europe. (1) It has passed through the northwest provinces of India into Afghanistan, and thence along the caravan routes by way Balkh, Bokhara and Khiva to Orenberg in Russia (1829, 1843–4); (2) it has spread from southern India up the gulf to Persia, and radiated southwestward to Syria and Egypt, and northwestward across Persia to the Caspian Sea, thence to Astrakhan on its western shore; from that port up the Volga to Saratov and Kasan (1830); (3) it has been transported, mainly in relation with the pilgrim traffic, to Red Sea ports, has gained Egypt and spread thence to the Mediterranean basin, and since 1865 the epidemic has always, until this year, taken the last mentioned route, and the attention of international conferences has been, in the main, confined to devising precautions for protecting Europe from invasion by way of the Red Sea and Egypt.

This year the epidemic has once more followed a more northern course, and has afforded one more striking illustration of the readiness with which Asiatic cholera can be conveyed along a trade route. Cholera appeared in Afghanistan late last year and caused a considerable mortality in Cabul; during the winter months (January and February) the epidemic died down, but in March there was a severe outburst and the disease continued to be epidemic for several months. In March also the disease had reached Herat, in northwestern Afghanistan, and was producing several hundred deaths a day. Two months later it had become established in Meshed, in northeastern Persia, and spread slowly thence to Nishapur, Sabyawar, Abbasabad, and Shahrud, only becoming epidemic in Teheran some two or three months after its appearance in Meshed.

Very different from this slow march of the epidemic westward through Persia was its swift progress once it touched Russian territory. The disease was recognized at Askabad during the first day of June, having in all probability spread there from Meshed a little earlier. At Askabad the epidemic touched the Transcaspian Railway, which runs from the eastern shore of the Caspian Sea through Askabad, and Merv to Bokhara and Samarcand. Cholera spread eastward and westward along the course of the railway with great rapidity. Nor was its progress arrested, or even checked, by the Caspian Sea, for its presence in Baku, on the western shore, was admitted, officially, within a fortnight of its recognition in Askabad, and private telegrams show that it had undoubtedly been present for a week or ten days before this. Baku is an important trade centre. It is the terminus of the Transcaucasian Railway, which brings it into direct communication with Black Sea ports, while steamboats on the Caspian connect it with the terminus of the Transcaspian Railway, and with Astrakhan, the southern outlet of the trade of the Volga. The spread of the epidemic in Baku itself, favored by the existence of gross sanitary defects, and by the want of competent municipal government, was rapid, and even the brief telegraphic dispatches have given a picture of social disorganization which can hardly be equalled in the whole terrible gallery which Asiatic cholera has provided for the warning and instruction of mankind.

With cholera raging in Baku, and with an inapt administration relying entirely upon quarantine regulations illogically planned and imperfectly carried out, it was no matter of surprise that the epidemic found its way eastward along the Transcaspian Railway as far as Tiflis, and northward by the Caspian boats to Astrakhan. How early the last named city was infected is not, and probably never will be, known; when the presence of the epidemic in Astrakhan was recognized officially it was already prevailing in Saratov, some 500 miles higher up the river, and a week later was reported from Kostroma, to the northeast of Moscow.

Within a month, therefore, of the recognition of cholera at a town on the Transcaspian Railway, it had penetrated to the heart of Russia, in Europe, the transit from Central Asia having taken as many days as, before the creation of railways and steamboat lines, it took months. The recognition of the significance of this fact is one of the most important lessons which the present epidemic has as yet afforded.

Having traced the progress of the epidemic from Afghanistan to Persia, with great probability, and from Persia to Russia in Asia, and from Russia in Asia to Russia in Europe, with precision, it remains to inquire how the infection reached Afghanistan. As to this there is room for some difference of opinion. It is natural, in the first instance, to turn our thoughts to the Hurdwar fair, the continuance of which the government of India found it advisable, this year to prohibit, on account of the danger of the dissemination of cholera. This great assembly of people, brought together primarily by a religious object, is frequented by pilgrims and traders from the Northwestern Provinces, by Kashmirees, and border men. The prohibition was not completely effective, and many of those who reached Hurdwar at an early date, or eluded the vigilance of the officials at a later, undoubtedly carried cholera for considerable distances. There is strong reason to believe, though the fact cannot be positively affirmed, that the disease was thus conveyed to Srinagar, the capital of Kashmir, where a severe outbreak began in May. While it will be admitted that the accumulation of a huge multitude of people at Hurdwar in the early spring, and their dispersal in every direction throughout northwestern India and the frontier countries, is a fact, the significance of which for Europe is greatly increased by the proof now afforded that cholera may be carried in a few weeks from the confines of Afghanistan to European Russia, it appears that the Hurdwar fair is not in any way responsible for the movement of cholera this year.

As has already been stated, cholera was epidemic in Afghanistan at the end of 1891. A month or two earlier—in September—an outbreak had occurred amongst laborers in the Hoti Mardan district, of the Peshawar division; there appears to be little doubt that this outbreak was originated by men coming from Swat, and other independent territories to the northeast of Peshawar. The laborers immediately dispersed, many fleeing to Peshawar, where an epidemic of a peculiarly fatal character occurred, both in the town and in the Pathan villages in the immediate neighborhood. The mortality in some of the villages in the valleys toward the eastern mouth of the Kyber pass was particularly severe. At a later date, many villages in the Sheirwari country, lying to the north of the western end of the pass, were ravaged, and towards the end of the year Cabul itself was attacked, as already mentioned.

It does not seem to be necessary to refer at any length to the spread of the epidemic at Hamburg; its dependence upon the line of emigration from Russia, appears to be obvious, and the probability of the occurrence of cases among emigrants arriving at that port from infected districts, *en route* for England and America, ought to have been foreseen and provided for by the authorities of Hamburg. This does not seem to have been the case, and unsanitary conditions appear to have been allowed to prevail, of which we now see the inevitable consequences. Neither does it come within the scope of the present paper to discuss the nature of the choleraic disease which began to prevail in Paris the early summer. Its epidemiological characters were not those of Asiatic cholera.

In conclusion, I would venture to make the following observations:

1. The greater rapidity of transit has increased the probability of the importation of cholera and other epidemic diseases from Central Asian countries to European Russia, and thence to Europe in general.

2. Asiatic cholera, in traveling by land routes, depends for its power of continued progress mainly upon the existence of unsanitary conditions, in towns in which traffic is temporarily arrested, for trans-shipment or otherwise. The necessary delay affords time for persons from infected districts to be attacked by the disease, and so to infect the place at which the halt is made. Such places become fresh centres from which the disease spreads along lines of traffic. This fact is well illustrated by the history of the present epidemic in Baku and in Hamburg.

3. Quarantine has once more shown itself to be a most ineffectual method of checking the spread of cholera. Quarantine, for instance, between Baku and Astrakhan utterly failed to prevent the spread of the infection to the latter town.

4. On the other hand, medical inspection of travelers, especially of those of the poorer emigrant class, combined with isolation of doubtful cases, appears to be once more showing itself to be an effectual method. At the same time, it must be recognized that no method can be effectual in the absence of good sanitary conditions, in ports and other centres of trans-shipment, or temporary arrest of traffic. In fact it may almost be said that the only effectual method of excluding cholera from a country is to exclude the infectious principles from its water-supplies.

5. The need for more precise, earlier, and more authoritative information as to the existence of epidemic diseases in all civilized countries, is urgent, and pending the organization of an international understanding upon the subject, it appears to be desirable to urge upon the government of this country the creation of an Epidemic Intelligence Department, in connection with the Local Government Board, which should collect and collate the information in the possession of that Board, of the Board of Trade, and of the foreign office.

6. The presence of Asiatic cholera this summer and autumn, on the Transcaucasian Railway, should not be lost sight of, as a recrudescence may occur next spring, and lead to infection of Batoum and Poti, and thence of other Black Sea ports.

85 Old Burlington street.

REMINISCENCES OF THE CHOLERA EPIDEMIC IN SACRAMENTO, IN 1850.

By G. L. SIMMONS, M. D., Sacramento, Cal.

The cholera epidemic which visited Sacramento in 1850 has rarely been equalled in the ratio of its fatalities or seizures to the estimated population. Its attack was as sharp and sudden as its departure, and only four weeks were consumed in its career; leaving behind a terrible record of death, misery, and human selfishness. During this short period, an imperfect mortality record was kept, and a roll of names obtained to the number of 347. It should be remembered, however, that Dr. Logan had not commenced his invaluable tables and statistics, and all agree that a large number were victims of the cholera at that chaotic period, for whom no one took the trouble to ask for name or history. Furthermore, in the record book for the same limited time we find the causes of 125 deaths set down as due to diarrhea or dysentery, and it is fair to assume that out of this number many were victims of the epidemic influence. From personal observation of the carelessness in recording cases that died in tents and camps, without covering or attendants, and, also, from conversations with the medical men of that period, I believe there were at least 500 deaths from cholera, and about 1,200 seizures, during the 28 days of the epidemic. The population was a little under 7,000; but, in calculating the ratio of cases to the resident population, it should be remembered that during the first week of the cholera visitation, people left the city in crowds, and one historian has stated that only a fifth remained to care for the sick or attend to the business of the place. A reasonable calculation will show that the percentage of deaths from cholera in Sacramento in 1850, far exceeds that which is now given for the afflicted city of Hamburg, in Germany.

Among the dead of that fatal month in Sacramento, were 15 members of the medical profession. This proportion of deaths among the practising physicians in any known epidemic is, also, unusual. They nearly all fell in harness, fighting the dreadful scourge, and attesting by the sacrifice of their lives the fact that heroes in our profession are always to be found during the most appalling visitations of epidemic disease.

The first case occurred on the river front, on the 19th of October; and the victim, being in a stage of collapse when first discoverd, soon expired. He had reached San Francisco the previous week by a Panama steamer, which had numerous cases of cholera on board; and from the Bay City, as was usual in those days, came to Sacramento on his way to the mines.

At that time I was a boy in San Francisco, and soon afterwards received a letter requesting me to go to Sacramento and assist in the disposal of a stock of drugs and medicines, which had been sent out from

Boston by a medical relative. Without a thought of danger, and in ignorance that I was running any unusual risk by this business acceptance, I came to this city on the old steamer McKim, at a cost of $20, and in the gray of an early fall morning sought my destination. Even at that early hour, I found the drug store open, and a number engaged in putting up medicines for the waiting sick. A pall had evidently settled over the town, and all conversation seemed to be related to the treatment of cholera and the names and numbers of the seizures. Quite often during the day, rough wagons would deliver at our door numbers who desired to purchase medicines, or get advice from the physicians, whose offices were connected with the establishment by cloth doorways. In some cases, poor creatures would be seen to have strength enough to reach the main door, when they would fall down; and it was a common sight to witness these homeless and friendless victims in all stages of the dread disease, lying upon the floor. With the over-worked physicians, I was often obliged to care for these sufferers; and it has been a source of wonder to me since that time, that so many of us escaped with our lives, when but little care was taken to disinfect the rice-water discharges, or to take personal precautions against the germs of the scourge. There were a dozen physicians and employes in our store, and out of this number but one (Dr. G. W. Held) died. This gentleman was a Russian graduate, who had seen cholera in his native land, and who had worked days and nights in trying to relieve the sufferers, when one evening he said: "Boys, I feel the cholera coming on, and am going to die." In spite of the united efforts of medical friends, who appreciated his unselfish devotion to his profession, he passed away on the second day of the attack. "He had saved others; himself he could not save."

It will not be necessary to write further of the sad scenes or record of that dreadful season. It will be sufficient to say, that never were a people more favorably placed to receive the contagion, which spread with great rapidity. Without home comforts, or the tender care of women, men of all classes yielded up their lives in the midst of dirty camps, and in temporary bunks of transient hotels; and the dead men's blankets were often used as covering for the next occupant. It is also certain that the community, as a class, were more or less affected before the approach of the cholera, by diarrhea, superinduced by unhealthy food taken during the long journeys overland or around Cape Horn. This condition of the alimentary canal was also aggravated by exposures and sad disappointments, incident to homesickness and the search for gold.

The treatment of cholera during the Sacramento epidemic was varied and in many cases based upon the experiences of the greater epidemic of 1832. I think a majority of practitioners—if a patient could be seen in the first stage—believed in the beneficial effects of large doses of the mild chloride of mercury. Following this the greatest efforts were made to prevent the further depletion from the bowels by the administration of opium, camphor, capsicum and ginger. Injections of starch water and tincture of opium were also common, and applications of dry heat, rubefacients and frictions to the skin of the whole body were always insisted upon. The terrible thirst was often relieved by wine-glassful doses of seidlitz or soda water. In the cold stage, a mixture of aromatic ammonia, ether and tinct. cinnamon was often ordered.

As we now find it to be the case, cholera specifics and sure cures abounded everywhere, and the similarity of their composition to those recommended in the newspapers of our day is very evident. I have yet to see one of these specifics which does not contain opium in some form. One of our most popular remedies for counter prescribing was put up in porter bottles and contained tincture of opium, camphor, ginger, rhubarb, carbonate of soda, and blackberry root. The price per bottle was five dollars, and I remember one day when over a hundred bottles were sold to single customers over the counter.

The saline treatment of cholera during the adynamic stage, which is now being lauded as entirely novel, was tried on several occasions by the late Dr. B. B. Brown, with some success. Dr. Brown had been through one epidemic of the disease on the Mississippi river, and in consequence his services were often sought for. He brought with him in 1849 a little book upon the intravenous injection of saline solutions in cases of the last stages of cholera, by Dr. Marsden, of London, written and printed just after the great epidemic of 1832. I am now in possession of this little volume, and find the prescription used was composed of salt, carbonate of soda and oxymuriate of potash. Forty-eight ounces of the solution, at a temperature of 100°F, was slowly injected into the veins, and similar ingredients were given by the mouth every fifteen minutes.

A late correspondence from Hamburg, published in the San Francisco *Chronicle*, mentions the fact that Professor Rumpf, the head of the new Eppendorf Hospital, in Hamburg, where there are now being treated eleven hundred cholera patients, relies upon saline injections of the strength of one-half of one per cent. in the latter stages of the disease.

In closing this somewhat desultory article upon an early personal experience, I may be allowed to hope that the history of the causes and spread of the Sacramento visitation in 1850, may incite our authorities to insist upon the application of those well-known sanitary principles which alone will guard our homes from contagion. While the dreadful conditions which surrounded our early population are not likely to occur again, it is a self-evident fact that our town has yet within it some of those features everywhere recognized as being favorable to the propagation of contagious disease—chief among them being the want of proper sewerage, and the consequent impregnation of the soil by the excreta of our population, and the continued use of a contaminated water supply from the Sacramento river.

212 J street.

CHOLERA ASIATICA; ITS ETIOLOGY AND PATHOLOGY.

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The etiology of this disease is inseparably identified with the specific microbe causing it, the "comma bacillus," of Koch. Up to the year 1883, the cause and mode of origin of cholera were shrouded in vague hypotheses, which did everything else but accomplish the purpose for which they were intended. At this time an epidemic of cholera menaced Europe, and the German Government, ever alert in scientific investigations, sent Koch to India to study the disease.

Koch's researches were painstaking and thorough, and he was soon able to unravel the origin of cholera and determine its cause. He found a distinctive microörganism in the evacuations and intestinal contents of cholera patients, from which he obtained a pure culture. The germ is a short rod, about half as long as the tubercle bacillus, but thicker, with round ends and a pronounced curve along its longitudinal axis, hence the name comma bacillus. The comma bacillus does not, according to the majority of observers, produce spores.

The biology of this bacillus is interesting, belonging, as it does, to the least resisting microbes. High temperatures, above 122° F., destroy them in a short time, and they readily succumb to the action of acids. The acid contained in the gastric juice is very destructive, and they do not grow on gelatine containing a trace of acid reaction. They perish in a dry condition in a very few hours. The presence of other bacteria in foul liquids rapidly destroy the comma bacilli, and atmospheric air is necessary for their growth. Koch has shown that the comma bacillus occurs only in cholera and is demonstrable at the outbreak of the disease and disappearing with its termination. He has also proved that the germs inoculated in animals produce symptoms analogous to human cholera; with corresponding *post-mortem* lesions. There were various obstacles to the transmission of experimental cholera to animals, which were finally overcome when the gastric juice was rendered alkaline, or when the germs were placed directly in the intestines where the reaction is alkaline; for, as already shown, the acid gastric juice at once destroys the comma bacilli.

Not long after these positive experimental investigations, one of the attendants at the Imperial Board of Health, where culture experiments with the cholera bacilli were in progress, became suddenly sick with all the symptoms of cholera, and the specific bacilli were demonstrable in the evacuations.

The modes of infection are various. According to Pettenkofer, who promulgated his theory about twenty-five years ago, cholera is not transmissible from man to man. He held that the cholera germ developed in the soil, and was favored by a certain porosity, combined with moisture and contaminated with organic matter, such as sewage. The cholera poison thus developed was conveyed to man through air exclusively by the respiratory apparatus. The theory of Pettenkofer, which was almost universally recognized, cannot be reconciled with the life history of the comma bacillus. While it is true that the comma bacillus may lead a saprophytic existence outside the human body, there is very little evidence to show that it can thrive in the soil, and that it is not destroyed by the other organisms present. According to Pettenkofer's theory, the cholera poison enters the human body through the respiratory apparatus. This would require desiccation of the bacilli and their distribution by atmospheric currents. We have already learned that the bacilli of cholera are rapidly destroyed by desiccation, a fact which is in direct antagonism to this theory.

The leading writers now agree, that the disease is transmitted chiefly by water contaminated with the cholera bacilli. As is well known, cholera is endemic in certain districts of India, and the virulence of an epidemic in these regions is in direct proportion to the imperfection of the water supply. Experiments have further shown that the cholera bacilli not only live but thrive in water. When the bacilli enter the human body, either by food or contaminated drinking water, they rapidly develop in the intestines and with the discharges they leave the body to further act as sources of infection. Man is accordingly the active means of transmitting the disease.

The symptoms of cholera are characterized by excessive vomiting, violent purging, and rapid collapse. The complications are briefly: bronchitis, pneumonia, parotitis, decubitis, and nephritis. The sequelæ are such as are found after any other acute debilitating disease. During epidemics, cholera may assume different grades of severity. There are a number of cases resembling cholera nostras, to which the term "cholerine" has been applied. These cases are characterized by vomiting, purging, and collapse; the symptoms being mild in comparison with those fulminating forms of cholera where the patient is overwhelmed with the poison and dies in a few hours. The prognosis is uncertain, the mortality ranging in different epidemics from 30 to 80 per cent. Like other acute epidemic infectious diseases, the old and debilitated serve as favorable victims.

The *post-mortem* examination shows no pathognomonic anatomical lesions, and the anatomical diagnosis can only be made after a bacteriological examination of the intestinal contents and mucous membrane in which the cholera bacilli are always found in abundance.

In the diagnosis of Asiatic cholera, there is only one disease with which it might be confounded, and that is severe cholera morbus. The symptoms of both diseases are almost identical, and the demonstration of the cholera bacilli by staining or culture is alone of value in differentiation. Only an expert bacteriologist is able, by simple staining, to differentiate between the comma bacillus and the large number of other organisms inhabiting the intestines. A rapid and almost sure means of distinguishing the cholera bacilli from other microörganisms and adaptable for practical purposes, are the methods of Beywid and Schottelius.

Method of Beywid.—A 2 per cent. sterilized solution of peptone is rendered alkaline by the addition of a 0.5 per cent. solution of sodium chloride and bicarbonate of sodium. This solution is then inoculated with the suspicious fecal matter, and allowed to remain in a thermostat for 24 hours. With the mixture thus obtained, an addition of hydrochloric, sulphuric, or oxalic acid will yield a beautiful violet-red color if cholera bacilli are present. A similar reaction may be obtained with other bacilli, but it is less pronounced, and requires a longer period of time for development.

Method of Schottelius.—The suspected stool is mixed with an equal quantity of alkaline meat broth, and placed in an open glass for 12 hours, at a temperature of 30–40° C. The bacilli rapidly develop on the surface, and are then examined under the microscope, after staining. A saturated, watery solution of fuchsin is the most efficient of all the aniline colors. The coloring matter is frequently absorbed with some difficulty, so that the fuchsin must be allowed to act for at least 10 minutes, or the staining solution must be heated in order to get good preparations. The cholera bacilli are decolored by Gram's method.

The prophylaxis of cholera in general is accomplished by isolation of the sick, and thorough disinfection of the discharges and clothing of the patients. Inoculations with cultures of the comma bacillus, as a preventive measure in cholera, and practised during the last epidemic in Europe, have been reported upon adversely by the French Commission. Individual prophylaxis is best secured by frequent bathing, and the use of intestinal antiseptics. Digestive disturbances must be avoided, or if present must be treated promptly. Water for drinking purposes must be previously boiled. The same is true of ice.

Culture experiments with the cholera bacilli demonstrate two important facts, which may be of prophylactic value: (1) That the acid gastric juice destroys and renders the cholera bacilli harmless; hence, in animals, inoculations by feeding are only possible when the bacilli are introduced into the intestines, where the reaction is alkaline, or into the stomach, where the gastric juice has been previously rendered alkaline.

(2) That the prevention of the flow of bile to the intestines enhances the success of inoculation. Bile normally stimulates peristalsis, and when prevented from entering the intestines, their inactive condition enables the microörganisms to develop. These facts supplied by the laboratory suggest two things: the prophylactic use of dilute mineral acids, and mild cholagogue purgatives.

425 Geary street.

THE TREATMENT OF ASIATIC CHOLERA.

By **Wm. Watt Kerr**, M. A., M. B., C. M., Professor of Clinical Medicine University of California, San Francisco.

When the treatment of Asiatic cholera is viewed both in preventive and curative aspects, it includes the subjects of quarantine, disinfection of vessels and baggage, all of which are beyond the range of this paper, as the intention is to deal more particularly with individual measures for the prevention and cure of the disease.

During the present epidemic in Europe and its threatened invasion of our own country, much has appeared through the public press in relation to treatment, which has had the effect of awakening a sense of danger; but, on the other hand, many statements have been so utterly at variance with clinical observation and scientific research, and the instructions for protection so imperfect, as to lull the people into a false sense of security. Since it became evident that the United States was in danger of being visited by cholera, there has been considerable correspondence as to the climatic conditions least favorable to the development of the disease, so that the wealthier and more fortunate portion of the community might, in the event of an outbreak, avail itself of any protection that would be afforded by change of residence; consequently it will not be amiss to state, briefly, what experience has taught concerning this topic. There seems to be a general impression that the towns in this State, and especially San Francisco, are not likely to be great sufferers, because the climate is comparatively mild; and it is further stated that the probability of the disease reaching California is very slight, as the frost in the Eastern States will have destroyed the germ long before it could travel this distance. Such statements show an ignorance of the nature of the disease and the methods of its transmission; but the absurdity of limiting the time for cholera to reach San Francisco from New York is very evident, when we reflect that, under the present conditions, when transcontinental travel is so frequent and rapid, all the time necessary for the disease to reach one city from the other is the four and a half days that it takes the locomotive to speed from the Atlantic to the Pacific Ocean.

A very grave error exists in the impression that frost is invariably fatal to the spread of cholera. It is true that hot weather seems to foster the disease, but two or three of the epidemics that have occurred in Great Britain—which is a colder climate than that of California—since 1832, raged during the winter months; and in 1830 the disease withstood the extreme cold of a Russian winter. It often dies out in the winter to reappear in the spring; and this happens, not because the specific poison has been destroyed, but because the cold has frozen much of the refuse water, so that the poison can no longer percolate through the soil and contaminate the wells and streams which constitute the water supply. Koch's investigations show that the comma bacillus thrives best between the temperatures of 86° and 104° F., but that they are not injured by much lower temperatures is evident from the fact that a culture was exposed for one hour to a temperature of 16° F., so that the bacilli were frozen for this length of time. A fresh culture of gelatine was successfully inoculated from this frozen culture, and the bacilli resulting therefrom did not show the least change in appearance or development. Therefore, regarding the influence of temperature upon cholera, all we can say is, that in some countries hot weather seems to favor the spread of the disease.

The altitude of the sanitarium probably affords greater security, because in Europe the disease has never been known to prevail at an elevation of more than 600 or 800 metres above the sea level; although in other parts of the world it has raged at altitudes of 2,000 to 2,500 metres. The fact that a high altitude is protective in one part of the world while it fails in others, would indicate that there are still more climatic conditions which influence the course of the disease. Pettenkofer has sought to supply this link by his soil-water theory, which maintains that cholera never prevails as an epidemic where the soil is impermeable to water, or where the level of the soil water is not liable to fluctuations. This is not absolutely true, but it is evident that in a porous soil the specific poison is more liable to percolate, and contaminate the wells and streams which constitute the water supply; while a fall in the level of soil water, such as generally occurs during the summer and autumn months, permits greater emanations from the ground, which might contain the poison of cholera. Therefore, the climate that is least liable to be infected by cholera is that where the temperature is low, the altitude great, and the soil non-porous.

In domestic hygiene, the most essential feature is to maintain the purity of the water supply. There always is danger that the wells and reservoirs may be contaminated by sewage containing the poison, and therefore all water used for household purposes should be boiled for at least one hour before use.

It is frequently asked whether any water should be simply brought to the boil, as is too frequently the custom when people are told to use this precaution; prolonged boiling is absolutely necessary for the destruction of the poison. For the same reason, all food should be thoroughly cooked, and all articles of diet which cannot be treated in this way should be avoided. The bacilli grow very luxuriantly and rapidly in milk without producing any apparent change in the fluid. All refuse should be burned immediately or removed daily. The practice, so common in most houses, of having the refuse removed only once or twice in each week, is bad at any time, but it is positively dangerous during the prevalence of a cholera epidemic, as it provides a favorable condition for the propagation of the poison.

Medicines can be used which will lessen the risk of infection. Some years ago an epidemic of cholera broke out in the Insane Department of the Philadelphia Almshouse, and within twelve hours after the inmates had been put upon sulphuric acid lemonade, the epidemic ceased, no new cases occurring except in one patient who refused to take the lemonade. The epidemic broke out again two days after the administration of the acid had been stopped, but it was again arrested by the same treatment. This knowledge, obtained by clinical experience, was explained many years later, when Koch discovered the comma bacillus and demonstrated its causal relation to cholera, for he then showed that acid mediums arrested the development of the bacillus. Therefore the use of the acid lemonade was much safer than water for drinking purposes, and also the frequent introduction of acids into the stomach would tend to destroy any bacilli that had been ingested with the food.

Another very important precaution is to check any symptoms of diarrhea. It must not be imagined that there is any relationship between cases of simple diarrhea, occurring during an epidemic of cholera, and Asiatic cholera itself; but it has been proved that gastric and intestinal catarrh predispose to cholera by making the alimentary canal a favorable nidus for the development of the specific poison. Possibly the best treatment for such cases of diarrhea, is to remove all irritating matter from the intestines by means of the compound rhubarb pill, which has a secondary astringent effect, and then to administer astringent mixtures or intestinal disinfectants. If the patient be actually attacked by the disease, he should be put to bed at once, and in the early stage opium should be given freely. It is not likely that much or any benefit will follow the exhibition of drugs by the mouth, as it cannot be expected that absorption will take place from the alimentary canal, which is secreting fluid in copious amounts, and therefore the hypodermic method promises better results.

When the algid stage is reached the morphine should be discontinued, unless in the form of hypodermic injections to allay the cramps, should they be severe. The patient should be wrapped in hot blankets, surrounded by hot bottles, and vigorously rubbed, or, while enveloped in his blanket, he may be placed in a hot bath, the friction being maintained all the time. Stimulants are best given as hypodermic injections of camphor oil, since large quantities of alcohol in the stomach are liable to cause vomiting. When the collapse is great, much benefit has frequently followed the injection of a saline solution into a vein. Possibly even better results will follow hypodermoclysis, which consists in introducing into the subcutaneous tissue large quantities of a solution of chloride of sodium, three to four parts per thousand, at a temperature of 100° F. There is no doubt that the fluid would be readily absorbed from the tissues, and as the operation is more easily performed and much safer than that of opening a vein, it could be commenced earlier in the disease and repeated more frequently. Care must be taken not to make the solution too strong in salt. During the stage of reaction, caution is still necessary. Food and stimulants, in the form of beef tea, broths, and gruels should be given at short intervals, and in small quantities, lest vomiting be reproduced by overloading the stomach. Should suppression of urine still persist, the patient should be encouraged to partake freely of warm drinks, to which small doses of digitalis may be added.

A proper use of disinfectants is absolutely necessary to the prevention of the spread of cholera. The specific poison is contained only in the dejections from the bowels; therefore if these discharges be disinfected before they are thrown into the closet, and if all linen, clothing, furniture, and persons soiled by the discharges be immediately disinfected, the disease will not spread from one patient to another. No other infectious disease is so readily controlled by sanitary measures, when these are intelligently and inflexibly observed. To be thoroughly disinfected the feces should be received in an *earthenware vessel* containing an equal amount of solution of mercuric chloride 1:500, or of carbolic acid 5 per cent., and should be exposed to the action of these germicides for nearly two hours before the vessel is emptied into the closet. Prolonged exposure is absolutely essential to the destruction of the microbe, and we may just as well expect to cook a leg of mutton by dipping it into boiling water, as to destroy bacilli by the method usually adopted, of momentarily exposing to the action of a germicide. If the stools are not thoroughly disinfected before discharging them into the closet or privy, then the latter become infected and are a fruitful source of extending the disease to other people.

If the excreta are thus thoroughly disinfected, it is not absolutely necessary to use any additional means for the disinfection of the closets; but it is a wise precaution to flush the traps daily by the sudden discharge into them of two or three buckets of water. In localities where the privy system is in vogue, the fecal matter should be freely mixed with powdered chloride of lime.

Clothing and bedding which have been used by choleraic patients, should be burned if possible, but if this be too great a sacrifice, let them be boiled for at least one hour, or if this be impracticable, hang them up, well spread out, in a closed room, and fumigate them with sulphuric acid gas for at least twelve hours. Furniture, china, and similar articles, can be cleansed by repeatedly washing them in a solution of mercuric chloride, 1 part to 1000 of water. There are many other methods for disinfection, but the above are best adapted to household purposes, and within the reach of all.

528 Sutter street.

THE HYGIENE OF THE INDIVIDUAL.

By W. A. BRIGGS, M. D., Sacramento, Cal.

In a nutshell, the personal hygiene of cholera embraces all those personal measures that may prevent either the lodgment, propagation, or injurious effects of cholera microbes in the human system. Cholera depends on a specific microbe, whose multiplication is favored by warmth, moisture, and filth; whose entrance into the body is gained chiefly by three means, named here in the order of their importance—liquids, food, air, and whose injurious effects are specially promoted by disorders of the digestive organs.

From this preliminary statement may be derived the following rules of personal hygiene:

1. Avoid infected persons, materials and districts.
2. Restrict communication, whether direct or indirect, with the outside world to a minimum compatible with health and humanity.
3. In case of suspected contact with infected objects, disinfect clothing and body at once.
4. Thoroughly boil all water to be used for drinking, washing, bathing, scrubbing, brushing the teeth, rinsing the mouth, or any other personal or domestic purpose.
5. On no account send washing to public laundry where it is likely to be infected by clothing of mild and unrecognized cases of cholera.
6. Thoroughly cook all foods and boil all drinks shortly before using.
7. If possible, take foods and drinks at home only, or where proper precautions are understood and enforced.
8. Before eating, thoroughly wash face and hands and disinfect them with solution of corrosive sublimate, tartaric acid and water (1:10:1000).

The atmosphere has been unwarrantably ignored as a means of scattering cholera germs. Infected matter may become dried and carried into the air by various means, lodging on foods, drinks, or the mucous membrane of the mouth or air passages, and thence find its way to the stomach. Germs may also pass into the air with sprays produced by bursting bubbles, rising gases, and the agitation of liquids. Hence rule

9. In infected districts wear a suitable respirator that may be frequently disinfected by dry heat or otherwise.

The cholera microbe thrives best in an alkaline medium. The stomach, therefore, which normally contains an acid secretion, may be regarded as a natural quarantine station, where infected substances are detained and disinfected. It is of prime importance then to keep the stomach in a healthy condition. Hence,

10. Eat only plain, digestible, nutritious foods in moderation, at regular hours. Eat slowly and masticate thoroughly.

11. Do not use fermented drinks—beer, wine, root-beer—alcoholic or iced drinks, iced foods, sweetened lemonade, or an excess of any liquid, and especially of alkaline mineral water. Drink, at meals, boiled water, plain or carbonated, mild alkaline mineral water, boiled milk; between meals, boiled water, slightly acidulated with lime juice—without sugar.

Should the cholera microbes escape the gastric quarantine and pass on into the intestines, they will find there the conditions most favorable to their rapid multiplication—a temperature of about 100° F. and organic matter in liquid or semi-liquid form, and of alkaline reaction. Prevention is no longer probable, but perhaps not impossible. The secretions of the liver and pancreas are more or less antiseptic or disinfectant, and if normal in quality and quantity, may digest or destroy invading parasites before they have time for propagation. The antiseptic influence of these secretions, however, will be impaired by excessive dilution, and is normally lost altogether in the lower intestine, where decomposition sets in, even in health, if the bowels become constipated. Hence,

12. As already advised, do not drink an excess of liquids.

13. Do not allow the bowels to become either loose or constipated.

14. Avoid chilling the skin, depressing emotions, overwork and fatigue, irregularities and excesses, and all other influences that in any way enfeeble the digestive powers.

Finally if, despite every precaution, cholera germs obtain a foothold in the intestines, the system will need all its powers of resistance in this hand to hand struggle with one of the deadliest foes of the human race. If the mucous membrane of the digestive tract, the liver, kidneys, and other excretory organs, and the brain and nervous system are weakened by alcoholic excess, or by any other cause, the inroads of the disease will be more rapid and more fatal. Therefore,

15. By observing all the laws of health, keep every function at its best.

212 J street.

GENERAL HYGIENIC CONSIDERATIONS IN RELATION TO CHOLERA.

By W. R. CLUNESS, M. A., M. D., Sacramento, Cal.

Despite the warnings of far-sighted physicians and sanitarians, we are threatened with that exotic, cholera, at the most inopportune time the dread scourge could have visited us. Following in the wake of influenza, which proved so fatal to the feeble and the aged, and which so lowered the vital forces of those who survived its depressing influences, we are brought face to face with a plague far more terrible and deadly. Cholera, however, differs materially from influenza, in that it is a preventable disease, its spread depending principally upon our non-observance of the laws of hygiene, and being wholly uninfluenced by the direction or force of the winds, whereas influenza found in the atmosphere a soil which favored the rapid propagation and spread of its germ.

The observation and experience of authorities the world over clearly demonstrated many years ago that people living in filth (animal or vegetable matter in the process of decay), and those living in proximity to its polluting influences, succumb to certain forms of disease far more readily than those who are cleanly in their persons, habits and surroundings. It was, nevertheless, not so clearly shown until a comparatively recent date, that cholera, the most dreaded disease of all, because the most rapidly fatal, depended upon filth for the propagation of its special germ.

To prevent the introduction of cholera into a community we must, therefore, prevent the accumulation of filth, and should promptly and continuously remove all such material as of necessity forms wherever any number of human beings are congregated. The general sanitary condition of cities, towns, villages, and individual premises everywhere should be at once placed in the most cleanly condition possible, and should be so maintained. Garbage of all kinds should not be allowed to decompose and rot in our cellars, alleys, and by-ways, but should be carted away as soon as it has been discarded or become unfit for use; and no scavenger should be employed for this purpose who does not cremate all such material immediately upon its removal. Municipal authorities should always rigidly enforce this precept, but especially during cholera times, under penalty of fine and imprisonment.

For the more effectual sanitary purification and cleansing of large cities, local sanitary committees should be organized in every ward as auxiliaries to the regularly constituted authorities, and they should be clothed with municipal authority to enable them to enforce their mandates promptly and efficiently. Such committees should possess authority to inspect cellars, low lots, privies, vaults, cess-pools, plumbing, and low damp places wherever they may be found or suspected.

They should likewise have full control over the fruit and vegetable trade, butchers' stalls, fish markets, hen and pigeon coops, and, in fact, every thing and locality in which filth can collect, or animal and vegetable products be exposed for sale or use. They should also supervise the sewer and drainage systems within their wards, and report to the proper authorities any defects that may be found to exist; and it should always be borne in mind, and frequently impressed upon the people, that the germs of cholera increase most rapidly in filth that is moist and warm, and cannot multiply in a clean and dry soil. Such committees will also be found of the utmost benefit in reporting the first cases that may occur within their jurisdiction, for it will be found that many lives will be saved by the promptness with which they are isolated, and the premises occupied by them thoroughly disinfected. In this manner much can be done by the citizens in aiding municipal authorities to prevent and remove the conditions favorable for the reception and spread of cholera. All railway, river, and ocean navigation companies should likewise organize and establish sanitary systems whereby notification of first cases can be made, and isolation promptly followed.

As communities and cities are but aggregations of people and houses, each individual should recollect that the public health depends largely upon the manner in which his dwelling and its environment are maintained in a clean and healthful condition. Each individual can and should maintain thorough ventilation at all times from basement to attic of his house; every room therein should be frequently aired and exposed to the sunlight as often and as fully as practicable; cellars, pantries, halls, closets, and every dark corner where mould could form should be frequently cleansed and made as dry as possible, and whitewash should be lavishly used in all basements and outhouses. It is an excellent scavenger, and is inexpensive.

Transportation companies should be taught that the germs of cholera are frequently conveyed by merchandise, as well as by individuals or their personal effects; in fact, that goods of any kind may be the means of conveying them from one side of the continent to the other, and that the utmost diligence should be exercised in preventing such an occurrence. The mere suspicion that an individual affected with the disease had handled merchandise of any kind should cause the thorough disinfection of all such material, no matter what the cost to shippers or receivers. An ounce of prevention is always worth pounds of cure, but especially in cholera times. The judicious expenditure of money as a means of prevention will accomplish more good at present and during the next nine months than at any time in the history of California.

What if it does cost millions of dollars! Russia alone, we are informed, lost 114,000 of her people during July and August, and it is probable that twice that number would be nearer the truth. Let us, however, accept the figures acknowledged by official authority. Multiply, then, this number by 500, one-half the value in dollars of an adult life, and we have the enormous sum of $57,000,000 as the money value of those who died of cholera in Russia in sixty days. But this only takes into calculation the number of deaths; while it must be recollected that for every death there will have been at least three ill of the disease. Besides this, the cost of attending the sick, the interruption to labor and business of all kinds, the interference with railway travel and commerce, it will be impossible to even approximate.

By adopting a penny wise and pound foolish policy *now* disaster is almost certain to come upon us before the close of another summer, whereas by making a determined and united effort much of the evils attendant upon the scourge will certainly be averted. Sanitation should therefore be adopted at once and persevered in, in its broadest sense, by every community. There has already been culpable negligence charged against the authorities of New York, who have not had a tithe of the warning of approaching danger, or the opportunity of staying the progress of the disease, that we have had. To whom much has been given, of him much shall be required.

There is at present an apparent lull in the spread of the disease, but many such have occurred since its commencement in India, or even since it reached Europe, yet they have been invariably followed by the breaking out of several new cases in remote and unexpected localities. This has in all ages been characteristic of cholera, and it would surely be the part of wisdom to pay no heed to any temporary abatement; it is only temporary, and will surely be heard of again on the occurrence of a few hot and sultry days. The near approach of cold weather is in our favor, but the return of another summer will almost certainly awaken to activity the hybernating germs. Frost, it should not be forgotten, does not kill the germs, but merely renders them dormant. Constant and daily repeated cleansing and purification of our persons and premises constitutes the only safety.

When death occurs from cholera the body should be cremated as soon afterwards as practicable; but as this, the only perfectly safe sanitary method of disposing of the dead, has not yet become general because of custom and sentiment, bodies should be wrapped in blankets or other coarse fabric saturated in a solution of bichloride of mercury, 1:500, placed in an hermetically sealed coffin, and buried privately without pomp or ceremony. One living person is of far more value to relatives, friends and the public than an incalculable number of dead ones. There should be no sentiment on this subject. The grave should be at least five feet in depth; and as an additional precaution a liberal amount of the foregoing disinfecting solution should be poured upon the earth which is first placed over the coffin. The popular notion that ersons are sometimes buried alive, and that they afterwards come to fe, is the veriest nonsense. There is never sufficient oxygen in a offin buried several feet under ground to maintain life for a minute, or o enable a living person therein to return to life even if buried alive. he death struggles of persons buried alive so frequently narrated can-ot occur.

It has been said of quarantine that it is but a sieve through which the arger particles are prevented from passing, and surely this estimate of s worthlessness has been clearly demonstrated during the past few days t New York. Dr. Jenkins did the best he could to prevent cholera-nfested immigrants and passengers from conveying the disease in bulk nto the city, but what was to prevent himself and attendants from coneying the germs to the shore? Certainly nothing whatever; and there an be but little doubt they were so conveyed. It does not require a hipload of them to infect our country, for a single one, it has been omputed by Ferdinand Cohn, a German scientist, will, under favorble conditions, produce enough in less than a week to fill every ocean n the face of the earth with its product; and under present circumtances, with such rapid intercommunication between the various porions of our country, it seems extremely improbable that the germ, lthough small beyond anything our intellects can imagine, can be preented from reaching California.

1029 Second street.

DISINFECTANTS AND DISINFECTION IN CHOLERA.

By Geo. B. Somers, M. D., San Francisco, Cal.

Since Koch's memorable address before the Berlin cholera confernce, held in July, 1884, most writers have accepted the theory that holera is due to a specific germ. Koch demonstrated that in the deecta of cholera patients a peculiar microörganism, named by him the 'comma bacillus,'' is invariably present. Other facts regarding the eculiarities of origin, transmission, extension and epidemic prevalence f cholera, together with the influence on the disease of disinfectant neasures, showed that the cause must be either the comma bacillus tself or some germ that acts like it.

If Koch's theory be accepted, the course to pursue in order to formulate measures against the spread of the disease becomes plain. First, he life history of the comma bacillus should be known, with special eference to its mode of development and vitality, and, finally, the eadiest means of destroying the bacillus must be determined. If these oints are clearly understood and acted upon, much that is useless in he way of preventive measures will be avoided.

The following points are, therefore, of importance in reference to disinfection. Koch has shown that the comma bacilli are found almost exclusively in the alimentary canal of cholera patients, and are discharged in large numbers in the dejecta. They are rarely found in the vomit, and in the urine and saliva they do not occur. Outside the body, the most favorable soil for their development is in sewers, cess pools, and foul places generally; but the active agent in spreading the disease is undoubtedly the dejecta, and their complete disinfection is a matter of the highest importance. Another point emphasized by Koch, is that the comma bacillus does not form spores. The germ is, therefore, destroyed by much less vigorous measures than is required in the spore producing microörganisms. The relative value of the means most commonly used for disinfecting purposes can now be considered.

Heat.—Water or steam at 212° F. will destroy the comma bacillus immediately. Wherever it can be applied, disinfection by steam is one of the most effective and economical methods. Dry heat is not so certain, for it is less penetrating; but a temperature of 212° F., maintained for two hours, is sufficient to destroy all bacilli in articles freely exposed.

Corrosive Sublimate.—This substance in aqueous solution is generally admitted to be the most powerful of germicides. Ziegler states that a solution of 1:20,000 will kill the spores of bacilli in ten minutes, and that a solution of 1:5000 is a certain disinfectant, even when the time of exposure is very short. For practical use, however, the solutions should be somewhat stronger, varying from 1:500 to 1:5000. Sternberg states that the following standard solution, in the proportion of 1:500, may be made for a cost of about $1.35:

Mercuric Chloride	1 pound
Permanganate of Potash	1 pound
Water	500 pounds

The permanganate is added for two reasons. It gives color to the solution, which may prevent accidents, and also acts as a deodorizer. It is very likely, however, to stain clothing, linen goods, bedding, etc., a dirty brown. This stain may be removed by Labarraques' solution or a strong solution of oxalic acid. All solutions of corrosive sublimate should be kept in glass, earthenware, or wooden vessels.

Chloride of Lime and Chlorinated Soda.–Labarraques' solution (liquor sodæ chloratæ) and chloride of lime (calx chlorata) are the most popular of all disinfectants, and their reputation as deodorants and germicides is well established. Popularly their power is supposed to depend on the chlorine gas which they readily yield, but Sternberg states that their disinfectant properties depend on the large amount of nascent oxygen that is liberated when they come in contact with organic matter. This is a point of considerable importance, for it shows that to be effective, solutions of chlorinated lime or soda must come in direct contact with the object to be disinfected. The chlorine gas thrown off acts as a deodorant, but no dependence can be placed on its germicidal powers. As a matter of fact, no gas present in the atmosphere in respirable quantity, is capable of entirely destroying disease germs. Labarraques' solution (U. S. P.) is more elegant and better suited for the sick-room than chloride of lime, but the latter is cheaper and more available where large amounts of disinfectants are used. Labarraques' solution is generally diluted with from 2 to 10 parts of water. Chloride of lime is used in 4 per cent. solution.

Chlorine gas may be evolved from a mixture composed of:

Oxide of Manganese	4 ounces
Common Salt	4 ounces
Sulphuric Acid	8 ounces

Dilute the acid with a little water, then mix the substances and place in a deep dish.

Carbolic Acid.—A 5 per cent. solution is generally used. Its action is rather slow, and it does not rank as high as a disinfectant as formerly.

Sulphur.—Much faith is popularly placed in the disinfectant powers of burning sulphur. If the air be moist the sulphur fumes will combine with water, forming sulphurous acid, which has some value as a disinfectant. Sulphur fumes in dry air have little or no germicidal power. Accordingly, steam ought to be generated in the vicinity of burning sulphur, in order to make its fumes at all effective. On the whole, fumigations by sulphur are of doubtful utility. The amount of sulphur to be burned in disinfecting a room, should be 3 pounds for every 1,000 cubic feet of air.

Sulphates of Iron and Copper.—Large amounts of these salts are commonly used as disinfectants, but their value is questionable. In Dr. Parke's experiments on sewage putrefaction, the iron sulphate was found to have very little action in preventing putrefaction. For similar reasons, a committee of the Berlin Medical Society refused to recommend the salt in cholera. Koch states that it may stop putrefactive action by precipitating the nutrient parts of fluids, and thereby arresting the growth of the comma bacilli, though not destroying them. On the other hand, he believes that if the putrefactive action is allowed to proceed, other bacteria will develop, and eventually destroy the cholera germ. The use of the sulphate of iron may, therefore, defeat the very end aimed at. Less is known about the sulphate of copper, but it is supposed to be stronger than the sulphate of iron.

So much for the properties of the disinfectants commonly used. The agents to be relied on are, heat, corrosive sublimate, and chlorinated lime, or soda. In the practical application of disinfection, whatever agent is employed, it must come in direct contact with the object to be disinfected. The comma bacillus may be considered as originating in the dejecta of cholera patients, and as propagating in moist, foul places.

These are the objects for attack. The air is not contaminated by cholera bacilli to any extent, for it is in itself a disinfectant; and, furthermore, as soon as the cholera bacilli become dry, they perish.

Following are given, in detail, the steps to be taken in disinfecting against cholera. They are modified from the conclusions of the Committee on Disinfectants of the American Public Health Association. The solutions used may be made as follows: (1) Two drachms of corrosive sublimate to a gallon of soft water, making a solution of about 1:500. (2) Five ounces of chloride of lime to a gallon of water, which makes, approximately, a 4 per cent. solution.

For Excreta.—All vessels holding or receiving excreta should contain a 1:500 solution of corrosive sublimate, or a 4 per cent. solution of chloride of lime. After mixing with the disinfectant, all excreta should be immediately removed from the sick-room. Under no circumstances should suspected or infected cholera patients be allowed to use water-closets. Privy vaults, drains, slop-hoppers, and cesspools should be thoroughly cleaned, and then disinfected with chloride of lime, in powder or solution.

Clothing, Bedding, Etc.—Whatever is of little value should be burned. Soiled underclothes, linen, and bedding should be boiled for an hour, or allowed to soak several hours in a solution of corrosive sublimate, 1:1000 in strength. Woolen or silk garments, and similar articles, which would be injured by hot water or disinfecting solutions, should be exposed to dry heat, at a temperature of 212° F., for at least two hours. Soiled mattresses and blankets should be destroyed by fire, or exposed for an hour to superheated steam, or soaked in corrosive sublimate solution.

Individuals.—As a wash for the hands and soiled parts of the body, corrosive sublimate solution of 1:1000 should be used. This may be diluted to 1:5000, if it is found to irritate. As a general wash for the entire body, Labarraque's solution, diluted with nine parts of water (1:10), is preferable. Individuals suspected of having cholera should be isolated, with strict disinfecting measures. Persons exposed to the disease should be kept under quarantine for ten days. If during this period any sign of diarrhea appear, they should be kept ten days longer.

The Dead.—The body should be enveloped in a sheet thoroughly saturated with a 4 per cent. solution of chloride of lime, or a 1:500 solution of corrosive sublimate. Where practicable, bodies should be cremated.

The Sick Room—The wood-work, walls, floors and ceilings of all rooms in any way exposed to cholera, should be washed, both during the attack and after the room is vacated, with a 1:1000 solution of corrosive sublimate, or a 4 per cent. solution of chloride of lime.

Vehicles, Cars and Ships.—All vehicles, in which cholera patients have been carried, should be washed with corrosive sublimate solution, and any cloth upholstery should be removed and destroyed. Cars from an infected district, or carrying infected passengers, should not be allowed to pass a *cordon sanitaire*, which should generally be drawn at the State line. Exposed travelers should be kept in quarantine at the cordon for ten days, and their clothing thoroughly disinfected. Ships are subject to strict quarantine laws in the United States, but it will do no harm to repeat that, in disinfecting them, more reliance should be placed on disinfectant washings, than on fumigations.

Baggage, Mails, and Merchandise.—All baggage should be thoroughly inspected, and any soiled garments should be laundried or exposed to dry heat. The mails have never yet been known to introduce cholera, but as a matter of precaution, they may be thoroughly dried or exposed to the fumes of burning sulphur. In order to secure penetration, a hole should be cut in the envelope. Merchandise does not need very strict attention, but the importation of food products of all kinds from infected districts should be strictly forbidden.

46 O'Farrell street.

NATIONAL QUARANTINE STATIONS ON THE PACIFIC COAST.

The protection of this coast by the National Government from the invasion of cholera and other epidemic diseases coming from foreign ports is, or soon will be, as perfect as human ingenuity supplementing scientific sanitary measures can make it. Three national quarantine stations (one of which is already completed) form the line of defense, and are located as follows: One at Diamond Point, near Port Townsend, in the Straits of Fuca; the second at Angel Island, in the Bay of San Francisco; and the third on Point Loma, at the entrance to San Diego. All of these stations are to be thoroughly equipped with complete disinfecting plants, including fumigating steamers, steam heating cylinders, and bichloride vats. The station at San Francisco is now ready for occupancy, and can accommodate all ordinary demands. The other two stations are being rapidly completed, and the Marine Hospital Service will soon feel itself in command of the situation on this coast.

A brief description of the completed plant located upon Angel Island, in "Hospital Cove," will answer for all the stations on this coast, as well as for those located on the Atlantic seaboard, viz.: at the Delaware Breakwater, mouth of Delaware River; at Cape Charles, in Charleston Bay, on Fisherman's Island; near the Georgia coast, on Sapelo Sound, on Black Beard Island; and near Key West, at Dry Tortugas.

The most important building of the plant is the Lazaretto, which is fitted up for the reception of patients suffering with contagious or infectious diseases, and capable of holding fifty persons. It is connected by a covered way with the adjunct building, in which is located the kitchen, dispensary, laundry, nurses' rooms, etc.

The detention barracks are provided with bunks for the accommodation of persons held under observation, and divided into different rooms for the two sexes, and for dining room, kitchen, etc. This will accommodate 1500 persons. The hospital for non-contagious diseases (not yet completed) is intended for such cases of ordinary sickness as may occur among the detained passengers. A warehouse, for the reception of baggage, and a disinfecting house, for the destruction of disease-breeding germs, are located immediately upon the wharf.

The latter building contains three large disinfecting cylinders, 50 feet long by 8 feet in diameter, constructed of steel, and so arranged that, by double jackets and steam coils, super-heated steam can be forced into them under a pressure sufficient to destroy all living organisms. Dry heat, at 250° to 300° F., can also be used in these cylinders. In addition to the above, a fumigating steamer, provided with a blast furnace and sulphur oven, can, by means of large, galvanized iron pipes led into the hold of a vessel, force SO_2 into every portion of the ship's hold; while, at the same time, by means of a separate engine and pump, a bichloride solution can be utilized in washing down the cabins, decks, and woodwork, as well as disinfecting the staterooms, etc.

There is one point which demands attention in case very many cholera-infected vessels come into the port of San Francisco. While the station is ample for ordinary invasion, it is not large enough to accommodate the sick and well of several ships at the same time. Before this contingency arises, it would seem best that the whole island should be occupied by the Government for quarantine purposes. It is useless as a military post at any time, and on the same principle as "military occupancy" of any available land during threatened war, it should be occupied by the Marine Hospital Service during threatened invasion by cholera. This can be done by order of the President, as was the case a few days ago when Sandy Hook was taken possession of for quarantine purposes.

The station near Port Townsend, on Diamond Point, will be equally well equipped if Congress can be induced to make the necessary appropriation. The government purchased sixty-five acres of land on the point, adjoining the military reserve, and some of the buildings are to be put up at once. At present, the national quarantine officer aids the local authorities in making inspections; but should an emergency arise, he is empowered to improvise a camp at Diamond Point, similar to the one just completed at Sandy Hook.

The building of the station at San Diego is under contract, and will be pushed to completion as rapidly as possible. The selection of a site was difficult, and but five acres were obtainable; the location, however, is a good one, and, as it joins the large military reserve, additional ground can be had in case it is required. Like Port Townsend, inspections only are made at present, but a camp can easily be established in the event of contagious disease presenting itself at that port. There is no local quarantine officer at San Diego.

All the national quarantine stations are under the immediate control of the United States Marine Hospital Service, whose corps of officers have been trained in the management of contagious diseases, and especially fitted for the work. It is expected that more extended powers will be given the service by Congress at its next session, as it has been found that under present national laws, the Government has absolutely no control of quarantine inside of State lines, unless requested by the State Government to exercise its authority.

THE QUARANTINE SERVICE OF SAN FRANCISCO IN RELATION TO CHOLERA.

By **WM. M. LAWLOR**, M. D., Quarantine Officer, and United States Inspector, San Francisco, Cal.

The quarantine laws require all vessels entering the bay of San Francisco from any foreign port, to come to an anchor in quarantine grounds, and under penalty of law proceed no further until they have been passed upon by the Quarantine Officer. It is my custom to board all vessels, see every soul aboard, and if found in good sanitary condition, the vessel is allowed to proceed to her dock. All China steamers are thus inspected, and in addition, all Chinese are vaccinated by the ship's surgeon immediately after leaving Hong Kong. As soon as the Farallones are sighted, all the steerage passengers are sent on deck; then the steerage, and all the steerage baggage, is submitted to fumigation. The passengers are held on deck until I am satisfied that I have seen all on board; the steerage is then opened up in my presence. By this process I am certain that I have seen all the passengers. The records of this office show, that during the year past we have had some 8 vessels, with from 1 to 7 cases of small-pox, and from 200 to 1,100 passengers and crew. With the facilities at our disposal we were enabled to prevent the introduction of small-pox into the city, and we were successful in maintaining a complete and absolute system of quarantine for five consecutive months. I refer to the above facts to show that, in my opinion, the Board of Health, with the superior facilities at their disposal, will be as fully able to protect the State from the infection of cholera by water as they were in the case of small-pox. With reference to the facilities at hand to deal with cholera, I think I am justified in saying, that the United States National Quarantine Station on Angel Island is now fully equipped. With the efficient officer in charge, and the improved methods at his command for isolation of infected patients, well ventilated and commodious quarters for those that have been exposed, and ample space for them to be in the open air, the frequent fumigating of their quarters, any cases of the disease can be well cared for. There are superior advantages for the fumigating of baggage and personal effects by means of steam, or hot dry air, in the large and extensive steam boilers, consisting of 3 cylinders, 7 feet in the clear in diameter, and 40 feet long, providing ample capacity to fumigate all baggage, and even the freight of a vessel, if necessary. In addition, the station has been furnished with a steam tug, on which is the latest and most improved machinery, for generating sulphur fumes, so that by means of powerful steam attachments, the fumes can be forced into the vessel in all its different compartments, and thus secure complete fumigation and disinfection. The station is now in thorough and complete equipment, and has accommodations for the care of a thousand people comfortably; and by the construction of additional wooden barracks, or the erection of tents, the accommodations could be extended to almost any limit. The United States authorities and the local Board of Health are in perfect harmony, and are acting in unison. They have at their command all the latest and most improved sanitary methods, to enable them to combat successfully with any case or cases of cholera, or any other infectious disease, that may come into port. I therefore think we are justified in saying that the people of the State may feel secure in the belief that cholera, if it should make its appearance by sea, will be held in check, and the State protected. The United States Station is so situated that the fear of anyone in quarantine leaving the station is reduced to the minimum. The only, and to my mind the most important, point that is not provided for, is proper facilities to dispose of all cholera-infected clothing, and of the bodies of those unfortunate enough to die of the disease, by fire.

506 Battery street.

THE SANITARY CONDITION OF LOS ANGELES.

By **Granville MacGowan**, M. D., Health Officer, Los Angeles, Cal.

Regarding the preparations that have been made by the authorities of Los Angeles in view of a possible epidemic of Asiatic cholera, I may say that the Chief of Police and the Superintendent of Streets have co-operated with the Board of Health as well as they possibly could in giving the city a general clean up. Beyond this we have simply exercised our regular care. Our force of inspectors has not been increased for the reason that the City Council, in the language of one of its members, in open session, takes the position "that it is time enough to give extra assistance to the Board of Health when the cholera is here."

Our water supply is much better than it has ever been. All portions of the city, with the exception of the western hills, are furnished with pure water, of excellent quality, which is derived from sources safe under ordinary circumstances from contamination.

One-third of the city is now sewered, and the internal laterals of the new system are ready to connect with the outfall sewer, which will be commenced in about a month. In the course of the next year the city will, I believe, have a sewer in every street, and the connections in every house. At an election in the month of August, the citizens voted for the issuance of bonds sufficient to build the projected outfall, and the Council is about to let the contract for building same.

The County Physician and myself have arranged plans for an isolated and efficient cholera hospital, in case the cholera appears here this winter. The services of a competent pathologist have been retained for the examination of dejecta from suspected cases. All emigrants coming from the ports of New York or Philadelphia are carefully looked after upon their arrival here. In addition, the State Board of Health has made full provisions for their examination and detention at the State line, if necessary.

10 Burdick Block.

THE SANITARY CONDITION OF MARYSVILLE.

By DAVID POWELL, M. D., President Board of Health, Marysville, Cal.

In the event of an epidemic of cholera in California, Marysville, from a sanitary point of view, would perhaps be as well prepared to resist its advent as any other town on the coast. The local Board of Health is exerting every effort in the direction of putting the city in the best possible sanitary condition. The health officer has been instructed to make a house to house inspection of premises, and measures have been instituted looking to a thorough sanitary survey of the city, and the prompt abatement of all nuisances prejudicial to the public health.

In common with all towns in the Sacramento valley, similarly situated, Marysville suffers from imperfect facilities for drainage. The sewers discharge their contents into the rivers, only during the lowest stages of water. During the winter and early summer months, the surface and sipage waters are satisfactorily disposed of by pumping; but a thorough system of sewerage by this means is impracticable, and the result has been the almost universal use of that crude and most unsanitary contrivance, the privy vault at all times an expensive and unmitigated nuisance, and in the face of an approaching epidemic, a veritable death-trap. Recognizing the dangers accompanying the use of these open privy vaults, the Board of Health has advised, and the city government has been urged to enforce an ordinance providing for the immediate abolishment of privy vaults, and substituting the dry earth closet system—the only system, in the absence of proper facilities for drainage, that should be considered or permitted in any community. Some have already adopted the method, and the indications are that dry earth closets will soon be in general use throughout the city—the benefits of which would be incalculable in the event of a cholera epidemic.

The history of cholera in California, during the early settlement of the

State, illustrates the well-known fact that the prime factor in the spread of this disease, is the use of contaminated water. The cholera, at that time, followed the rivers and streams, along the banks of which a large portion of the population were congregated, and from which the water was used for all purposes, without any precautions in the way of boiling or filtering. River, spring, rain, and superficial well-water are all more or less exposed to pollution, and their use, therefore, is at all times unsafe, but especially so during the prevalence of any infectious disease.

It is a noteworthy fact that Marysville enjoys a remarkable immunity from epidemics of contagious diseases. Diphtheria, scarlet fever, typhoid, and kindred affections are seldom encountered here; and when they do occur the disease invariably appears in a sporadic form, affecting, perhaps, several in one family, rarely spreading to others, even in the immediate vicinity, and soon disappearing. This has been, without exception, the history of these diseases in this city; and while occasional cases of diphtheria, scarlet fever, etc., are reported, they have never become epidemic, and it is seldom that death from these causes is recorded.

This freedom from an occasional epidemic of infectious diseases is attributable in part, no doubt, to favorable hygienic influences, but mainly to the exceptional properties, wholesomeness, purity, and abundance of our water supply, which is obtained from artesian wells from 100 to 200 feet each in depth. The depth of these wells insures freedom from infection from surface water and sewerage, and the water being stored in a set of iron tanks, properly enclosed and ventilated, and thence conducted through iron pipes to all parts of the city, it is safely protected from any possible contamination, from its source to its most distant point of distribution. This, in my opinion, is the safest means of water supply that can be obtained for any city.

Peri Block.

THE SANITARY CONDITION OF OAKLAND.

By D. D. Crowley, M. D., formerly Health Officer and City Physician, Oakland, Cal.

The health and mortuary reports prove conclusively that Oakland, from some reason, is a more than ordinarily healthful city. Its equable climate, its sea breezes and many other natural advantages aid materially in diminishing mortuary figures.

The Health Department itself has never been sufficiently empowered with the necessary privileges to benefit the city through any sanitary regulations. Even yet it has no recognized plumbing rules.

There are now several portions of the city which during the year have an unusual number of deaths from zymotic causes. Commerce street, in East Oakland, which practically is a ravine, has a main sewer constructed through it. As yet this sewer is higher than the adjacent drainage territory, and the result is that stagnant pools exist on each side of it for many blocks. The sewers which serve the southern portion of the city are imperfect and empty into Oakland bay at the very margin of the city. There should be an intercepting sewer.

The main intercepting sewer passing from Lake Merritt, on the east, to San Francisco bay on the west, is at the east end constructed of brick, and for many blocks at its termination is of wood, which is now in an imperfect condition, the sewage matter oozing from it into the marsh, where there are many other small woodwork sewers in a similar condition. This main sewer empties into San Francisco bay, the sewage clinging to the edge of the city.

The western extremity of this sewer, the southern portion of the city for six blocks, the Commerce street sewer in East Oakland, have each year an unusual number of zymotic deaths in their locality.

The city dump, which is situated near the western extremity of the main lake sewer, is a most unfortunate nuisance. The entire garbage of the city is carried there. During the past three years efforts have been made to procure a crematory to destroy all garbage, but the Health Department has been powerless.

Since cholera has reached the East, the various city officials are interesting themselves more than ever before. The Board of Health has been empowered and has selected seven additional sanitary inspectors for one month. They are making a systematic, house to house inspection, and are investigating gutters, sidewalks, etc. I believe, too, that the Board of Public Works, City Council, and Board of Health are to have a joint meeting to consider ways and means of improving the city's sanitary condition.

Regarding the water supply of the city, Dr. George Pardee reported the following on September 21st, 1889: "Mr. O'Neil found the water contained .08 of one part and 38 of one part of free ammonia and albuminoid ammonia respectively per 1,000,000 parts of water. This analysis was made August 30th, 1889. On September 5th, 1889, the water was again analyzed, proving the water to be slightly purer than on August 30th. Dr. Pardee, however, expressed the opinion that too great a quantity of albuminoid ammonia existed in the water to permit its classification as wholesome, as fairly pure water should contain no more than .01 of one part of albuminoid ammonia per 1,000,000 parts of water. The doctor added that the water with each analysis was improving, and that he hoped in a few weeks that it would be all that could be desired. I do not know that any further analysis of Oakland water has been made, and while I do not consider the water the purest, I do not think it is detrimental to health.

The Oakland water can still be improved by filtering and settling basins. In it there is an unnecessary amount of animal and vegetable matter. At Lake Chabot, from which Oakland is mostly supplied, grazing has been permitted upon the water shed. The water shed of Lake Temescal, from which the northern and highest portion of the city is supplied, is also used for grazing. These conditions are not yet vigorously dealt with. A small portion of the city is now supplied by mountain water, which to the eye appears perfectly pure.

1003½ Broadway.

THE SANITARY CONDITION OF RED BLUFF.

By J. M. West, M. D., Health Officer, Red Bluff, Cal.

The natural drainage of Red Bluff is unsurpassable. About one-fourth of the town is under sewer, and the balance is not, by any means, in a bad condition. The sewers all empty into the Sacramento river.

The water supply is obtained from the Sacramento river and from Antelope creek, a mountain stream, a distance of eight miles, through pipes. In case of an epidemic endangering the Sacramento water, we could shut off that altogether and still obtain sufficient quantities from the creek for all domestic purposes.

Since the first alarm the town has been given a general cleaning up, and is now in very good sanitary condition. We have no hospitals or buildings erected for the purpose of taking care of contagious diseases, but we could soon improvise means for the care of patients in case an epidemic should visit the community. During the visitation of cholera to this coast in 1850 it did not extend as far up the valley as this point.

Our people are very much alarmed over one case of small-pox here, which proved fatal to-day. The patient was immediately quarantined on the first symptoms of the disease, and we do not anticipate any spread of the disease. This case was contracted in Victoria, B. C.

THE SANITARY CONDITION OF SACRAMENTO.

By H. L. Nichols, M. D., Health Officer, Sacramento, Cal.

The fact that cholera has made its appearance in the harbor of New York, naturally causes fear that it may gain a foothold in the city, and then find its way across the continent and secure a lodgment in our midst; and the further fact that in 1850 Sacramento was stricken with the disease, causes apprehension on the part of many that if it should make its way westward, this would be the point at which it would likely make its attack. The conditions of our city and the habits of its people, in 1850 and now, are vastly different, and altogether in favor of the present time.

Then sanitary conditions were entirely neglected. People had come from all parts of the world, and were living in tents and frail houses, sleeping often upon the ground, eating unwholesome food and drinking vile liquids, disregarding almost entirely a proper manner of living. At that time some overland emigrants brought the germs of cholera in some of their luggage or blankets, and thus the disease found a lodgment in Sacramento. The conditions and habits of its people made ready subjects for its deadly work. Many sickened and died. There seems, however, to be a great difference in the statements of persons who were here at the time, as regards its fatality, some estimating the number of deaths as reaching fifteen or sixteen hundred, while others say only a few hundred. The records, however, show 338 deaths; it is reasonable to suppose, however, that all were not recorded. These deaths occurred from the latter part of October to the middle of November. An extensive fire occurred about this time, and probably had much to do in exterminating the disease, no cases appearing thereafter. At that time no precaution was taken to prevent the introduction of disease. People sick or well came with impunity. Is it any wonder, then, that the population was sorely stricken.

At the present, however, while the avenues for the introduction of disease are greater, they are much better guarded, the city in a much better sanitary condition, the people living in comfortable homes, surrounded with all the comforts and luxuries of life, thereby making them less liable to disease. Our streets have been improved; our system of sewers has been extended, so that a good portion of the sewage is conducted to a receptacle at the extreme portion of the city, and then taken care of by pumps prepared for the purpose.

The Trustees use due diligence in cleaning the streets, alleys, and sewers, and frequently flushing the latter. The Board of Health has been, and is, using its best efforts in having every portion put in a healthful condition. Our death-rate is far below that of cities and towns in the most favored portions of the eastern States. I trust that the prompt and firm course pursued by the health authorities of New York will prevent the disease gaining a foothold in the United States. The ports on this coast will be well guarded, and our State Board is alive to the importance of guarding our frontiers. Our City Board will use all its powers to keep the sanitary condition as good as possible, and also in preventing the introduction of the dread disease. If every person will use proper care in cleanliness of premises and manner of living, I believe we need have little fear.

426½ J street.

THE SANITARY CONDITION OF SAN DIEGO.

By Thos. L. Magee, M. D., Health Officer and City Physician, San Diego, Cal.

The city of San Diego is built on the northeast shore of the bay of San Diego, and occupies a beautiful and commanding situation, the land rising gradually from the water's edge, until it reaches an altitude sins. In it there is an unnecessary amount of animal and vegetable matter. At Lake Chabot, from which Oakland is mostly supplied, grazing has been permitted upon the water shed. The water shed of Lake Temescal, from which the northern and highest portion of the city is supplied, is also used for grazing. These conditions are not yet vigorously dealt with. A small portion of the city is now supplied by mountain water, which to the eye appears perfectly pure.

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The city of San Diego is built on the northeast shore of the bay of San Diego, and occupies a beautiful and commanding situation, the land rising gradually from the water's edge, until it reaches an altitude of 54 feet. From this point the rise is more rapid, until at a distance of 2¼ miles from the water front the elevation is about 300 feet. The drainage, therefore, is perfect, and there is no such thing as bog or moist land within her borders. The water level is about 100 feet below the surface, and no amount of rainfall will change this level the fraction of an inch.

In 1888, the city put in a system of sewers, known as the "separate system," under the supervision of Col. Geo. E Waring, which is complete in all its parts, and with the exception of the outfall, works perfectly and satisfactorily. The outfall proved to be an insupportable nuisance, and many subterfuges were adopted to remedy this defect, but not until the alarm of an invasion of cholera crossed the continent was it taken in hand with a firm grasp. On the recommendation of the Board of Health, such improvements are now being made as will effectually and permanently abate the nuisance.

The Board of Health are having the city thoroughly cleaned, as rapidly as the force at their command can do the work. Large numbers of additional sewer connections are being enforced, and dry-earth closets are being cleaned and disinfected. In addition to this, quantities of rubbish, which has accumulated on vacant ground, which is not inimical to the health but offensive to the eye, is being also removed. Should the emergency require it, the Board expect to appoint a market inspector, whose duty it will be to make daily inspections of all the food supplies offered for sale, and promptly condemn mouldy, decayed, or unwholesome fruits, meats, vegetables, or other articles of diet, seeing that they are immediately removed to the garbage scow, to be taken out and dumped in the ocean.

Our present water supply is unsurpassed by any in the State, being soft, pure mountain water, from a reservoir in the Cuyamaca Mountains, about 60 miles from the city and at an elevation of 5,000 feet above sea-level. From this reservoir the water flows down the rocky bed of a creek, known as Boulder Creek, for 15 miles, with a fall of 3,000 feet, so that by the time it reaches and enters the head of the flume in which it is conveyed to the city distributing pipes, it is thoroughly aerated and all organic matter perfectly oxydized. Should there be any appearance of cholera in the city or county, the Board design asking that a patrol be put on the flume line, to see that nothing gets into the water containing the germs of disease.

Before the construction of our sewer system, and while the city water supply came from wells sunk in the bed of the San Diego River, our annual death rate was as high as 26 and 28 per 1,000; and among the causes, digestive disturbances and malarial affections were a dominant factor. Last year, with the new sewer system and mountain water, it fell to 11 per 1,000, and this year it will be still lower. During the 8 months ending August 31, 1892, there has not been a single death from any of the so-called filth diseases. So far as I can learn, there has never been a case of Asiatic cholera in San Diego City, and the very few cases of cholera morbus that have arisen in our midst, have, without exception, had their origin in the use of mouldy or otherwise damaged or poisonous articles of food.

While the charter vests the Board of Health with authority to appoint a quarantine officer for the bay of San Diego, and to detain all vessels from infected ports, or otherwise, requiring inspection; yet, the existence of a fully equipped United States quarantine station, and the presence and supervision of an efficient Marine Hospital Surgeon, in the person of Dr. W. W. McKay, renders any action in this direction unnecessary and superfluous.

In conclusion, I would say, that taking into account our very equable climate, the perfection of our system of sewers, the superior quality of our water supply, the almost absolute exemption of our people from those gastro-intestinal disturbances so prevalent during the summer and autumn months east of the Rockies, with a strict supervision over the quality of food supply in the market, and the necessary removal of garbage and disinfection, we expect to carry our city over any emergency that may arise, without developing any epidemic.

THE SANITARY CONDITION OF SAN FRANCISCO.

By MARTIN REGENSBURGER, M. D., Member of the Board of Health of San Francisco, Cal.

Immediately on hearing the news of the outbreak of cholera in Europe, the San Francisco Board of Health decided to take the strictest precautions possible, first, to prevent the appearance of the scourge in our city, and if that was impossible, to place the city in such a condition as to present the least favorable field for the spread of the disease.

A meeting was called to confer with the State Board of Health in order to deliberate upon the ways and means of quarantining all persons, baggage, mail, etc., coming into our State by land. Suggestions were made to detain all trains at the border, these trains to be boarded by a medical inspector to thoroughly examine each and every passenger as to his health and previous residence. All suspicious passengers and their baggage to be side-tracked and kept under observation for from twelve to twenty days. All cars infected with cholera not to be allowed to pass the border, but to be side-tracked and thoroughly fumigated.

Our quarantine officer was instructed to be on the alert for ships coming from infected ports, although there is no danger from that source for the present, as the only infected ports to be feared are those of Europe. Still, in a few months from now, we may expect some sailing vessels from Hamburg with the dreaded disease on board. These shall be thoroughly quarantined before being permitted to dock.

Our city was in a fearful condition two months ago. Had I not personally seen it I would hardly have credited the foul reports which were constantly pouring in upon the health office. The board first visited Chinatown, where odors met us emanating from every house, store, and room, enough to make us believe that we were in a charnel house instead of in the heart of a civilized city. Sleeping apartments, kitchens, urinals, and privy vaults, huddled together in one compartment, occupying a space of not more than 5x7 feet, and sometimes the dripping feces of the upper story were used as flavoring in the kitchen below. In short, pen cannot express the condition in which these beings can exist. Cholera once entering these quarters would never cease until every Chinaman was extinct.

From here we went to what is known as Spanishtown and Dagotown, the home, but not the sunny one, of the Mexican and Italian. Here, in small alleys and *culs-de-sac*, crowded together almost as closely as the Chinese, we found men, women and children making chicken (?) tamales to be sold among our population. One woman (Mexican) with rupia on her arm, kneading the meal, another, with an ozena, grinding the meal, etc., were some of the appetizing sights we beheld. All this was done in dark alley-ways or back yards, and generally in one small room, where the rest of the functions of human life were performed at the same time.

The Italians, who are the rag pickers and junk collectors, live closely together in shanties at the foot of Telegraph hill, with their dirty children rolling and romping among the rags and junk.

The Board decided that these pest holes be cleaned immediately, and sent their inspectors with tons of chloride of lime to be freely distributed wherever found necessary. A house to house inspection was ordered made throughout the city, and wherever there were any nuisances or defects in plumbing, instructions were given to abate them forthwith. The sewers were thoroughly flushed, so that to-day I dare say San Francisco ranks as one of the cleanest cities in the United States, notwithstanding there are a great many public nuisances, such as our public dumps at the foot of Sixth street, which are still a menace to the health of the people.

Should the cholera ever reach San Francisco we would be in a sore plight what to do with our patients. Our pest-house is unfit for human habitation, and the only recommendation I could make would be to place patients either in tents, or utilize the new election booths for an improvised barrack system.

The Board has issued a cholera pamphlet, cautioning the people to keep their dwellings clean, and how to take care of themselves should the scourge appear in our midst. With all the precautions above named it will be a difficult matter for cholera to take any hold on our population, and I do not doubt that if we ever have the scourge here, it will be only in its sporadic form.

114 Geary street.

DEPARTMENTS.

OBSTETRICS, GYNECOLOGY AND PEDIATRICS.

By Wallace A. Briggs, M. D., Sacramento, Cal., and
Henry Gibbons, Jr., M.D., Professor of Obstetrics and Diseases of Women, Cooper Medical College, San Francisco, Cal.

Treatment of Cholera Infantum.—The following treatment is recommended in this affection:

Lactic Acid	gm.	2
Distilled Water		50
Strawberry Syrup		50—M.

S.—One coffee spoonful every 5, 10, or 30 minutes, according to the severity of the case.

Baths at a temperature of 30° to 32° C. Washing out the stomach with Vichy water. To prevent collapse, warm mustard baths, at a temperature of 38° C., continuing not more than 6 minutes, with subcutaneous injections of 50 cgm. of ether. A coffee spoonful of the following mixture may be given every 15 minutes:

Citrate of Caffeine	cgm.	25
Old Rum	gm.	20
Malaga Wine		50
Strawberry Syrup		40

—*Journal de Médicine de Paris*, August 7, 1892.

Chloride of Sodium in Pernicious Anemia Following Post-Partum Hemorrhage.—Nuchtoubé describes the different methods of administering a salt solution: by the mouth, by subcutaneous and intravenous injections. The two latter methods require previous sterilization, and special apparatus. One method always accessible is that of injections *per rectum*. The author refers to 5 cases, in which he injected 1 litre of salt water *per rectum*, with the best results. In one typhoid patient who had miscarried, the injection, notwithstanding a diarrhea, was retained, and the patient benefited.—*Journal de Médicine de Paris*, August 7, 1892.

Treatment of Chorea by Exalgine.—Loewenthal has employed this remedy in 35 cases of chorea. He prescribes the powder in warm, sweetened water, to be given ordinarily three times a day, in doses of gm. 2, five times a day in a few cases—the daily dose gm. 6. In children under 3 years, the quantity is decreased to gm. 1, repeated three times a day. Recovery takes place in from 8 days to 4 months. The earlier the institution of the treatment, the more rapid the cure. In a few cases, benefit was observed after 12 powders, that is, gm. 2.40 of the exalgine had been taken; but most patients showed no improvement until after the administration of 4 to 5-6 grammes. The maximum quantity for a young woman is 112 grammes. Exalgine acts favorably upon the psychic troubles frequently accompanying chorea. As secondary phenomena, he has observed: Nausea in 1 case; vomiting, 4 cases; lassitude, 2 cases; headache, 2 cases; vertigo, 1 case; vertigo, numbness and vomiting, 1 case; jaundice, 3 cases;

cyanosis of the lips, 1 case. All these symptoms ceased soon after stopping the exalgine, and did not generally reappear in the same subject when its use was resumed. Exalgine, then, may be regarded as very beneficial in the treatment of chorea, but not as a specific.—*Journal de Médicine de Paris*, June 5, 1892.

Treatment of Whooping Cough.—M. Leibermeister advises: (1) During the catarrhal period: Rest in bed, and the administration every two or three hours of a coffee spoonful of the following remedy:

Yellow Sulphide of Antimony	gm. 50
Gum Mucilage	20
Distilled Water	50
Simple Syrup	20—M.

(2) In the convulsive stage: Inhalations of carbolate of soda, bromide of potash, salicylate of soda, by the mouth, cochineal and carbonate of potash, relieving the cough by narcotics (opium), anesthetics (morphine), or inhalations of 10 to 20 drops of the following mixture: Sulphuric ether, 4 parts; spirits of turpentine, 1 part; quinine, and from 2 to 6 teaspoonfuls of

Extract of Belladonna	gm. 50
Syrup of Ipecac	15
Antimonial Wine	10
Distilled Water	150—M.

S.—May be given through the day.

(3) Change of air.—*Journal de Médicine de Paris*, August 1, 1892.

SURGERY.

By T. W. Huntington, B. A., M. D., Surgeon Southern Pacific Company's Hospital, Sacramento, Cal.,

J. F. Morse, M. D., Surgeon German Hospital, San Francisco, Cal., and

G. F. Shiels, M. D., C. M., F. R. C. S. E., Surgeon Polyclinic, San Francisco, Cal.

The Treatment of Compound Fractures.—In a paper read before the American Medical Association, Dr. W. H. Myers classifies the injuries of bone as: simple fracture, compound fracture, complicated fracture. The indications, when called to treat a case of compound fracture, are: (1) To arrest hemorrhage, render the wound aseptic, and prepare to set the fracture. (2) To keep the bones in normal position. (3) To conduct the case so as to prevent putrefaction and to remedy septic infection when it occurred. The cause of putrefaction is the presence of microörganisms which enter the wound from without, and the putrefactive fermentation of the discharges leads directly to septic infection. We interfere with their growth and development by the use of antiseptics, which gives us an aseptic wound. (*a*) By removing the germs before they have had time to do harm, by washing out the wound. (*b*) By removing the soil in which they grow, by free drainage. (*c*) By rendering the soil inert, through constitutional treatment, by general and local rest, and by keeping the patient in as perfect health as possible, thus increasing the vitality of the tissues. (*d*) By preventing the deposit of germs by absolute cleanliness of the hands, instruments, ligatures, and by irrigation. Previous to Lister, Baum, in Gottingen, lost 38 per cent.; Billroth, in Zurich, lost 38.7 per cent.; Billroth, in Breslau, lost 40.5 per cent.; Billroth, in Halle, lost 40.6 per cent.; Billroth, in Bonn, lost 41.8 per cent. Under the Listerian treatment, Professor Volkmann had 75 cases of compound fracture without a death. Lister, Volkmann, MacEwen, Bardenhuer, and MacCormac report 530 affected with 1,072 compound fractures, and of these only three died. In the treatment, after cleansing the entire limb with soap and water, and using a 5 per cent. solution of carbolic acid, ether is administered, and the wound closed with protective, sutures are seldom used, the parts are dusted with iodoform, and four or five thicknesses of bichloride gauze are applied; a layer of carbolized cotton and a plaster of Paris bandage complete the dressing and give the needful support to the limb. Drainage is not employed. If the fracture is below the knee the foot is elevated. The dressings are allowed to remain 14 days, or even longer, unless the thermometer indicates their removal. Perfect immobility is secured, muscular spasm is prevented, and with it absence of pain. The ideal wound dressing in a case of compound fracture is that which affords perfect rest, absence of tension, with antiseptic protection. A surgeon should always remember, in deciding whether amputation shall or shall not be performed, that upon his decision depends the future of the patient, whether he shall be a comparatively helpless cripple, or perhaps be sentenced, himself and family, to pauperism, deprived of the enjoyment and comfort of the performance of those movements which are held in estimation only second to life itself.—*Journal American Medical Association*, August 20, 1892.

In the discussion following the reading of the paper, **Dr. Geo. K. Johnson** reported the case of a brakeman, who sustained an injury to his leg, the tibia being carried away for the space of 2½ inches, the upper and lower ends presenting the condition known as "dentated." Upon passing the finger deep down in the wound pieces of the tibia were found entirely detached from the periosteum. These pieces (four in number) were removed; one large piece 2½ inches long, spear-shaped at both ends, and three smaller pieces, which were all placed in a warm carbolized solution. The limb being carefully cleansed and placed in its normal position, the pieces of bone were replaced as nearly as possible where they belonged. The wound was dusted with iodoform, protective placed over it, then a sheet of carbolized cotton, and over this six or eight layers of bichloride gauze; over this a thin bandage to retain everything in place, and over the whole an immovable dressing of plaster of Paris, which hardened in thirty minutes. The dressing was allowed to remain 28 days without interference. During this period the pulse remained at 75, never varying, and the temperature at no time deviated from 98.5°; sleeping well, free from pain; appetite good; cheerful and contented during all this period. Examination at this time showed the wound to be healthy; not one drop of pus; granulation had extended over all the replaced pieces of bone; union had progressed so far that the fibula was intact, and the tibia at the point of fracture was firm beyond expectation; no swelling nor abscess presented; the largest piece of bone had disappeared beneath the granulating surface. At the second dressing, which occurred two weeks later, the wound in the soft parts was filled up, and there was firm union of the bone, the replaced pieces remaining, but still somewhat visible. Pulse and temperature normal; appetite excellent; sleep undisturbed. The patient's condition all that could be desired; so far not one untoward symptom had presented itself.

Dr. Emmett reported a case in which a patient with a seriously injured foot was advised to have it amputated, but refused. Gangrene set in, and the leg had ultimately to be amputated above the knee. The man sued the physician for damages, on the ground that it was the physician's duty to use his own judgment. He won the suit, and the Supreme Court sustained the decision, saying that the surgeon was liable for damages, as the patient could not be supposed to know whether amputation was necessary or not.

Dr. Pidlon, speaking of non-union, referred to two cases of compound fracture, in which non-union persisted in spite of all the numerous plans tried. His plan was to put the limb in position and hold it there, preventing motion laterally and longitudinally, and then constrict the limb above the point of injury by a band, producing edema above the injured part. The legs were allowed to hang down, and in both cases union was perfectly solid. Eighteen months and a year respectively elapsed between the injury and this treatment. Thomas reported 40 cases so treated successfully.

OPHTHALMOLOGY, OTOLOGY AND LARYNGOLOGY.

By WM. ELLERY BRIGGS, M. D., Sacramento, Cal.

An Operation for Trichiasis, Districhiasis, and Entropean of Upper Lid.—DR. EUGENE SMITH describes an operation which he has found uniformly successful and easily performed. It is made as follows: A Snellen's clamp is placed on the lid and an incision made with a Beer's knife along the free border between the faulty and normal cilia, similar to the method in the Jaeger-Arlt operation. The incision is carried well up to the hair follicles, two or three lines, which are plainly seen when the slight flow of blood has been checked. If the wound does not gape, as it usually does, the anterior lip is raised with the forceps, and all the hair follicles upon the cartilage are touched with a fine point of the galvano or the Pacquelin cautery. If groups of faulty cilia are attached to the anterior lip, their follicles are also touched with the cautery. The wound is then washed with a 1:5000 bichloride solution. A pledget of cotton, wet in the same solution, is placed on the closed lids, where it is held for 24 hours with a strip of adhesive plaster. The reaction is surprisingly slight. Only the region of the hair follicles is touched by the cautery. Care must be taken not to destroy the canals of the tarsal glands, thereby causing atrophy, contraction of the cartilage and tarsal tumors. If all the faulty cilia have not been destroyed at the first operation, it may be necessary to repeat it. In partial trichiasis the incision in the margin of the lids should extend only a little beyond either extremity of the space accupied by the inverted hairs. The incision can be carried into the canthi and does not leave any cicatricial deformity. In mild entropion, the cartilage may be grooved with the galvano-cautery in similar manner to the grooving in Streatfield's operation. A flap of skin and muscle is raised over the convex or clubbed portion of the cartilage, and with the cautery point grooved its entire length. The flap is then united with sutures. The operation is simpler than Streatfield's, as any one who has attempted to remove a wedge-shaped piece of the tarsal cartilage can readily see. If it is desired to remove all the cilia, it can be more readily done with the galvano-cautery than by the old method.—*Journal American Medical Association*, August 27, 1892.

The Treatment of Incipient Cataract.—Another cure for incipient cataract has been presented, but the evidence is not sufficient to convince one that it is more efficient than the numerous treatments which have been tried and found wanting during the past centuries. This latest method was presented by DR. IRWIN at the meeting of the American Medical Association. The author reported 12 cases, in all of which he had applied tincture of iodine about the eye three to six times a week, with the daily use of galvanism and tonics in some form during 6 to 10 weeks. In all of his cases he reports either arrest of progress or improvement of vision at the end of the treatment. The progress of the cataract was arrested during the period of observation of those cases seen after treatment.—*Journal American Medical Association*, August 27, 1892.

DERMATOLOGY, SYPHILIS AND VENEREAL DISEASES.

By G. L. SIMMONS, JR., M. D., Sacramento, Cal.

Fatal Case of Cocaine Poisoning, Produced by Injection into the Tunica Vaginalis, following Puncture of Hydrocele.—In the *Bull. et Mem. de la Soc. de Chirurg. de Paris* the following case is reported: A 40-year-old man was tapped for hydrocele, and the fluid withdrawn and a 2 per cent. solution of hydrochlorate of cocaine was injected into the cavity. The fluid, perhaps a soup spoonful in amount, remained two minutes, and was then allowed to flow out. Tincture of iodine was then injected, and after a few minutes it, in turn, was expressed. Fifteen minutes after the patient felt well enough to go home, and, turning to go, suddenly became dizzy and fell senseless. Clonic and tonic spasms of all the muscles appeared, the countenance became deathly pale, pupils dilated, the pulse originally strong, faltered, and became weak and irregular, breathing shallow, and death shortly ensued. The autopsy, with the exception of a mitral insufficiency, showed negative results. As Reclus has shown, there have been 15 recorded cases of death from cocaine poisoning in the hands of medical men. In two of these, in which four injections of 10 cgm. each had been made, the responsibility of the cocaine as causative of death was questioned. In all the other cases more than 22 cgm. were injected. Slight symptoms of toxic effect often follow such doses as 2-3 cgm. Reclus asserts that the concentration of the solution adds greatly to the danger, and advises that a 2 per cent. solution of cocaine be the strongest used in injections.—*Centralblatt f. Chirurgie*, No. 32, 1892.

MATERIA MEDICA AND THERAPEUTICS.

By WM. WATT KERR, M. A., M. B., C. M., Professor of Clinical Medicine, University of California, San Francisco.

Subnitrate of Bismuth in Infantile Diarrhea.—MIKHNEVITCH having tried the salicylate of bismuth in fifty cases of diarrhea in infants under two years of age, reports that of the number only two died. The following formula is recommended:

Bismuthi Salicylici	grs. xxiv
Gummi Arabici	ʒ i
Sacch. Alb.	ʒ iss
Terrendo adde aq. dest.	℥ ii
Fiat Cal. tum adde aq. dest.	℥ iv

The bottle should be kept in cold water or upon ice and be shaken well before use. One or two teaspoonfuls to be given five to six times daily. Each teaspoonful of the mixture contains about half a grain of the salicylate, which constitutes a normal dose, three or four times daily for a child of six months. In cases of offensive diarrhea the administration should be preceded by a dose of castor oil. It must be kept in mind that in large doses the remedy is apt to induce perspiration with consecutive weakness; hence, a corresponding reduction of the dose may become necessary. In acute cases the remedy is useless, but in all of a week's standing or longer its effects are said to be excellent.—*British Medical Journal*, June 18, 1892.

Injections of Phenol in Tetanus.—CARLO reports a severe case of tetanus successfully treated by Baccelli's method—subcutaneous injections of one per cent. phenol, followed by warm bathing, and the use of clysters of chloral and potassium bromide. The symptoms commenced 27 days after the injury, and treatment was commenced on the following day. For 15 days the injections, baths and clysters were given 4 times daily, the number being reduced at intervals of 5 days to 3, and finally 2 daily. Improvement commenced on the tenth day, and progressed rapidly from that time, so that treatment was discontinued after the twenty-third day.—*British Medical Journal.* June 25, 1892.

MEDICINE AND PATHOLOGY.

By ALBERT ABRAMS, M. D., Demonstrator of Pathology, and Adjunct to the Chair of Clinical Medicine, Cooper Medical College, San Francisco, Cal.

The Etiology of Pleurisy.—M. JAKOWSKI (*Gazeta Lekarska*) has studied the exudation of 52 cases of pleurisy from a bacteriological standpoint. In 10 cases the pleurisy was primary; in 16 cases it was accompanied by catarrhal pneumonia; in 13 cases with phthisis; in 2 cases with acute articular rheumatism; 1 case with typhoid fever; 1 case with nephritis, and 1 with pericarditis. In 30 cases the exudation was serous, and in 22 purulent. The conclusions of the author are as follows: (1) All cases of pleurisy are of microbian origin. Each form is provoked by a particular pathogenic microbe. The other etiological conditions, such as cold, traumatism, etc., play only a secondary role. (2) The cases which on bacteriological examination gave a negative result, are of tuberculous origin. The bacilli are then found in the sub-pleural tissues. (3) Pleurisy accompanying catarrhal pneumonia is often provoked by the pneumococcus of Fraenkel. (4) Primary pleurisy originating from cold, is often produced by the same microbes. (5) The cases in which the pneumococcus is found alone, give a more favorable prognosis than when they are present with the streptococcus. (6) The presence of streptococci in a serous exudation is a precursory index that the exudation will become purulent; and further indicates that a radical operation will be necessary. (7) In the pleurisy accompanying acute articular rheumatism, the exudation contains the microbes of suppuration.—*Bulletin Général de Therapeutique*, July 15, 1892.

MENTAL DISEASES AND MEDICAL JURISPRUDENCE.

By A. W. HOISHOLT, M. D., Assistant Physician, State Asylum for Insane, Stockton, Cal.

General Paralysis in a Boy.—DRS. CHARCOT and DUTIL record a case of general paralysis of the insane in a boy of 16, the first symptoms of the disease having been observed two years previously. The boy had been bright and intelligent at school, and had had no previous illness of any significance. His family history showed nothing indicative of neurotic tendency, with the exception that his father was addicted to liquor, and had had an attack of delirium tremens soon after the boy was born. The patient was one of three surviving children of a family of eighteen. When he came under observation, he was found to look younger than his age, no marks of puberty being present. Intellectually he was rather feeble, and his memory impaired, but he showed fair capacity for attention to questions. His gait was uncertain and awkward, tremor was present in tongue and lips, and also in the hands, the handwriting being quite characteristic. There was difficulty in articulation; his pupils were unequal, and he was subject to attacks of peculiar sensations in different parts of his limbs, chiefly on the right side. In one such attack there was well-marked interference with speech function. No exalted ideas were present, but the case presented so many other characteristic features as to leave little doubt that it should be placed in the category of general paralysis, occurring at an unusually early age. Several cases have already been recorded in England and France. The authors quote the opinion of Mickle, that the age at which general paralysis develops nowadays is an earlier one than it formerly was, and is the result of a premature senility among individuals, and must be looked upon as indicative of the decadence of the race. Charcot suggests, however, that the occurrence of the disease at an earlier age may be due in part to our ability to diagnose the condition when its signs are much less manifest than they had to be years ago to be recognizable.—*Archives de Neurologie.—Lancet*, April 23, 1892.

FORMULÆ.

By Geo. B. Somers, M. D., San Francisco, Cal.

Cholera.—At a meeting of the Societé de Thérapeutique, held July 13, 1892, Dujardin-Beaumetz, a member of a committee appointed to formulate measures against the cholera, reported that the following had been decided upon:

(1) *To arrest diarrhea:*

Lactic acid ---------------- ʒ iiss
Simple syrup ---------------- ℥ iii
Spirit of lemon------------ ʒ ss—M.

To be added to a quart of water.

S.—Three tablespoonfuls every quarter hour.

(2) *To arrest vomiting:* Anodyne, Hoffman's:

Ethereal tincture of valerian ------------------āā ʒ i
Sydemham's laudanum (vin. op.)----------------mxii
Essence of peppermint--gtt v—M

S.—Twenty-five drops each time that vomiting or diarrhea threatens.

(3) Use stimulating drinks, warmth, bits of ice for the mouth, etc.

(4) Dujardin-Beaumetz added that by the use of menthol, ipecac could be used in large doses in dysentery, without causing vomiting. The following is the formula:

Menthol------------------gr. iv
Tincture of ipecac.-------ʒ iii
Alcohol -------------------ʒ x
Mucilage------------------℥ iv—M.

S.—Teaspoonful every two hours.—*Progres Medical.*

Turpentine in Typhoid Fever.—In a former number of The Medical Times (October, 1891, p. 568), a formula by Dr. H. C. Wood is quoted, which he recommends highly in typhoid fever. More recently he has published a modification of this formula, calling attention to the powers of glycerin in disguising the taste of turpentine.

Ol. terebinth---------------- ℥ i
Glycerinæ ------- ----------- ℥ i
Mucil. acac. -------- -------℥ iss
Ag. menth. pip.------*ad.* ℥ viii--M

S.—Tablespoonful every four hours during the day. Shake well.—*Therapeutic Gazette.*

PUBLIC HEALTH.

By W. R. Cluness, M.A., M.D., Sacramento, Cal.

Mortality for August.—The deaths registered in 120 town districts of the State during the month of August, in a population of 826,290, correspond to an annual rate of 14.86 a thousand, the total mortality having been 1,024. 185 deaths were due to zymotic diseases, giving an annual rate of 2.68 a thousand. Of these, 23 were due to diarrhea and dysentery, 50 to cholera infantum, 39 to diphtheria and croup, 12 to scarlet fever, 8 to whooping cough, 38 to typhoid fever, and 12 to cerebro-spinal fever. 195 deaths were due to diseases of the respiratory organs, giving an annual rate of 2.83 a thousand. Of these, 122 were due to consumption, 41 to pneumonia, 18 to acute bronchitis and 5 to pulmonary congestion, the rate being for consumption and pneumonia, respectively, 1.77 and .59. 95 deaths were due to diseases of the heart. The average annual death rate from all causes, occurring in the ten largest cities and towns in the State, and representing a population of 565,856, was 15.12 a thousand. The highest rate for the month occurring in cities having a population of 10,000 or more inhabitants was reported from San Francisco, the lowest from San Diego.

The Progress of Cholera.—At the close of my report of the progress of cholera for last month, August 26th, it again showed a rapid increase in the number of cases, and up to the 27th there had occurred in Hamburg 1,028 cases and 358 deaths. On the same day there were 45 cases and 28 deaths at Havre. Great alarm was also caused at Glasgow by the occurrence of two deaths from cholera. August 28th Great Britain manifested much anxiety, and on the 29th deaths were reported at Gravesend, Swansea, Glasgow, and Dundee. August 29th the U. S. Consul at Glasgow notified the State Department at Washington, that an outbreak of cholera had occurred there, among Russian emigrants for America; and on the same day, our Consul at Liverpool cabled the authorities at Washington, strongly urging medical inspection of all immigrants. It was also agreed between Health Officer Jenkins, of New York, and the representatives of foreign steamship lines, that all vessels arriving from infected European ports should be quarantined for from 2 to 5 days, before being allowed to proceed to their docks. On the same date, according to the official report, 4,767 cases and 2,824 deaths occurred in Russia. Deaths were also reported from Antwerp and Amsterdam. Paris likewise reported the admission of 20 cases to the hospitals; Havre 80 cases and 24 deaths. August 30th, increasing at St. Petersburg; 5,387 new cases and 3,134 cases officially reported in all Russia. Gendarmes summoned to quell a mob at Berlin, owing to the arrival of a young man from Hamburg from whom it was feared infection might spread. Increasing in Antwerp. Theatres closed in Hamburg, and 457 new cases with 13 deaths throughout the city. Four cases reported at Liverpool, of emigrants ready to embark for America. The first conspicuous case occurred in London. The most extensive measures taken for the reception and treatment of cholera patients, and the strictest isolation of the affected and their attendants adopted.

August 31st. The steamship Moravia, from Hamburg, arrived in New York harbor, and reported 22 deaths from cholera during the voyage. Quarantined. The people of England are becoming apprehensive that the country is doomed to another siege of the plague. Three deaths were reported at Dover. The Russian official record up to August 23d, showed 107,647 deaths, Hamburg, 810 new cases and 319 deaths. A fearful feeling of apprehension hangs over the city, and the epidemic is regarded as the worst ever known. Every person who can leave the city is fleeing. September 1st. The Moravia sent to Lower Bay; no new cases on board. The cholera bacillus not found in the washings of blankets. The President, after consultation with the Cabinet, instructed the Secretary of the Treasury to issue a circular, reciting the existence of cholera in various portions of Europe and Asia, and in several British ports, and ordering that all vessels from infected ports be prohibited from landing in any of the ports of the United States, until they had undergone quarantine for 20 days, unless such detention is contrary to the laws of a State, or regulations made thereunder. Unfortunately, Dr. Jenkins, Health Officer for New York, promptly announced his determination to pay no attention to the President's instructions, and stated he would release any vessel after one day's detention if he chose; but within 24 hours he was made to realize his impotence, for no sooner had he ordered a vessel released, than the Collector of the port at New York refused to allow her to land until after the expiration of the 20 days quarantine, established by order of the President, had been observed. Besides, other Atlantic ports politely notified Dr. Jenkins that the port of New York would be regarded as an infected port, unless the 20 days quarantine, ordered by the Federal Government, was observed, and would quarantine against her. Whatever, therefore, may be the opinions of an individual on the question of "State's rights," and however wise the dual system of State and National authority may appear under ordinary circumstances, there nevertheless arises an occasion when the nation must be supreme, and when, for the good of the people, all must submit to Federal authority.

Havre, 758 cases and 237 deaths reported to date; Hamburg, 3,888 cases and 1,772 deaths to date; Russia, 4,859 new cases and 2,529 deaths; Paris, 21 cases and 10 deaths; Havre, 59 cases and 19 deaths; Antwerp, 6 cases and 2 deaths; Bruck, 22 miles southeast of Vienna, 62 cases and 16 deaths. September 2d—Hamburg, 628 cases and 116 deaths; and in the vicinity, 50 cases and 15 deaths; Antwerp, 7 cases and 3 deaths; Russian emigrants forbidden to enter Germany; Russia, 5,273 new cases and 2,722 deaths. September 3d—The Rugia and Normannia arrived at New York from Hamburg, with cholera on board. On the former, 5 died during the voyage, and the same number were affected on her arrival; 5 also died on the Normannia *en route* and 4 were ill on her arrival. The passengers of both were reported as terror-stricken. Russia, 6,673 new cases and 2,714 deaths; Hamburg, 325 cases and 197 deaths; Paris, 41 persons admitted to the hospitals suffering from cholera, and 24 deaths. September 4th—New York harbor, 4 new cases and 4 deaths; Russia, 4,397 cases and 2,110 deaths; Havre, 1 new case; Hamburg, 587 cases and 187 deaths. September 5th—Steamer Clement arrived in Liverpool from Hamburg with several cases on board. Same day, the Elbe arrived in the river Tyne, having one of her officers down with the disease. Russia, 5,312 new cases and 1,751 deaths; Havre, 7 cases and 9 deaths; Hamburg, decreasing; New York, no new cases. September 6th—8 new cases and 1 death on the Normannia; no new cases on the Moravia or Rugia; Hamburg, 674 new cases and 264 deaths; also 2 at Coblentz and 2 at Magdeburg, and 5 cases and 7 deaths on the Island of Wilhelmburg, in the Elbe, opposite Hamburg; Russia, 4,376 cases and 2,073 deaths; Paris, 100 cases in Hotel Dieu; 19 deaths throughout the city and suburbs, besides 31 deaths and 329 patients suffering from choleraic diarrhea admitted to the hospitals.

September 7th—No deaths among the quarantined at New York, but 10 new cases, 8 on the Normannia and 2 on the Rugia, were reported. Russia, 4,286 cases and 1,897 deaths; Hamburg, 720 cases and 333 deaths; Paris, 89 cases and 47 deaths; Havre, 22 cases and 7 deaths. No new cases in Great Britain, and confidence expressed that it has been stamped out. September 8th—4 deaths and 10 new cases amongst the quarantined at New York; Hamburg 655 new cases and 315 deaths; increasing at Antwerp; Russia, fewer new cases and smaller death-rate; Paris, 63 new cases and 49 deaths, besides 22 cases and 13 deaths in the suburbs. September 9th—Hamburg, increasing in virulence, although the number of new cases is smaller; an average of 2,000 constantly in the hospitals; Russia, 3,443 cases and 1,169 deaths; no new cases in New York harbor. The Scandia, from the river Elbe (August 28th), arrived, and reported that 3 days after starting cholera broke out, and that of 39 attacked there occurred 32 deaths. September 10th—2 more deaths on the Scandia, 11 ill, and 12 suspects; on the Moravia, Rugia, and Normannia there is no sickness. Hamburg, 310 cases and 163 deaths, of which 128 cases and 41 deaths are said to belong to previous days' reports; typical cases less numerous, and character of cases milder; no report from any part of France; Russia, an increase of 918 cases and 927 deaths. September 11th—Shelter refused on Fire Island, New York, to quarantined passengers, and a riotous gathering assembled; 3 new cases and 1 death in the harbor; quarantine officers believe they have the scourge in check. Hamburg, 310 cases and 117 deaths; Havre, 8 cases and 5 deaths; Russia, 2,337 new cases and 1,869 deaths. September 12th—Exciting scenes at Fire Island; the mob resists the landing of the Normannia passengers. Hamburg, 309 cases and 175 deaths; in all 13,248 cases and 5,805 deaths since the commencement of the epidemic; Russia, again increasing, 5,654 new cases and 2,510 deaths; Paris, 34 cases and 22 deaths, besides 6 cases and 4 deaths in the suburbs; Havre, 13 cases and 8 deaths. A seaman is reported to have died of cholera in Grimsby Hospital. September 13th—Passengers of the Normannia landed without hindrance on Fire Island; no new cases in New York harbor; cholera vaccine experiments made by Dr. Hoffkine, France; Russia, 2,810 cases and 1,326 deaths; Rotterdam, 1 death: Dr. Proust informed the public that the epidemic in Hamburg is far more severe and fatal than has ever been known; Paris, 45 cases and 26 deaths; Havre, 10 cases and 13 deaths.

September 14th—Cholera, it has been acknowledged, has invaded the city of New York, and there is reason for believing it has been slowly spreading since the 6th. Six deaths have undoubtedly been due to it thus far, and 6 additional new cases reported. It appears probable that the germs were imported by either the Willand or Friesland, which were supposed to be clean, and therefore not quarantined. As has been aptly said, quarantine is after all but a sieve—an elaborate system of leakage. The Heligoland arrived with 2 cases on board; one death also occurred on the Scandia. Total deaths to date, in port, 29; *en route*, 63. Hamburg, 344 new cases and 14 deaths. Russia, the government having decided to issue only weekly returns, the number of cases and deaths is unknown. Paris and vicinity, 59 new cases and 47 deaths; Berlin, 1 case, fatal; Stettin, 2 cases and 1 death; Holland, 2 cases; Havre, 11 cases and 7 deaths; Hull, England, 2 of the crew of the Holderness, from Cronstadt, died of cholera at sea. September 15th—One more death in New York and several suspects. The Bohemia arrived from Hamburg, having 681 steerage passengers on board, and reported 11 deaths at sea, all children. No deaths among the quarantined. Cholera reported to be epidemic at Vera Cruz and San Luis Potosi. Hamburg, 283 cases and 108 deaths; Rotterdam, 1 case; Antwerp, spreading, 10 cases and 2 deaths; Russia, a marked decrease; Brussels, 3 cases and 1 death; Paris and suburbs, 45 cases and 11 deaths; Toulouse, 4 cases and 2 deaths; Hamburg, 206 new cases and 128 deaths; Russia, epidemic still virulent in many provinces; Havre, 15 new cases and 3 deaths; Naples, 8 to 10 deaths said to have occurred daily for the past few days. September 16th—37 new cases reported on the Bohemia; several suspects throughout New York city, and 1 in Brooklyn; 1 death on Swinburn island; decreasing in all infected European ports. September 17th—No new cases or suspects in New York or vicinity, excepting 1 on the Scandia, and 1 on the Bohemia, both of whom were removed to Swinburn island. The steamer America arrived from Genoa at Buenos Ayres, and reported 24 deaths from cholera during her voyage. Hamburg, 276 cases and 136 deaths, a decrease; Altona, 4 cases and 3 deaths; Havre, 3 new cases and 5 deaths; St. Petersburg, 48 cases and 15 deaths. September 18th—No new cases in New York, and no deaths at quarantine; 1 death reported at New Brunswick (N. J.). Hamburg, 236 cases and 127 deaths; Vienna, 4 deaths in Austrian Galicia; Paris, 50 new cases and 13 deaths; Havre, 6 cases and 3 deaths; Russia, a steady decrease. September 19th—1 of the Normannia's passengers, after being quarantined for 18 days, died of cholera at Camp Low (N. J.); a new case was also reported in New York city. It is reported to have broken out in Chihuahua, Mexico, and that Durango and other points are quarantined. Hamburg, 241 new cases and 115 deaths. The London *Standard*, however, gives the figures at 621 cases and 187 deaths. Havre, 9 new cases and 4 deaths; Paris, 29 new cases and 15 deaths; St. Petersburg, 12 new cases and 32 deaths.

September 20th—New York, 1 death reported as "suspicious;" Hamburg, 206 new cases and 105 deaths; Berlin, 2 cases and 46 suspects in hospital; the rivers Haerel, Spree, and Oder said to be infected with cholera bacilli; Havre, 6 new cases and 6 deaths; Paris and suburbs, 42 cases and 17 deaths; Vienna, cholera has broken out at Gratz and other points a few miles south of Vienna; Russia, decreasing in some provinces and more virulent in others. September 21st—2 deaths in New York city and 3 suspects; Hamburg, 513 new cases and 181 deaths; Russia, decreasing; Paris and Havre, decreasing. September 22d—Cholera believed to be practically stamped out in New York; Hamburg, 180 cases and 97 deaths, a decrease; Havre, 4 cases and 3 deaths; Berlin, 2 deaths, besides there are 8 men and 3 women in the hospital suffering from cholera; St. Petersburg, 32 cases and 12 deaths. September 23d—1 death, the 8th, since cholera reached the shore, September 6th; no new cases at quarantine. Hamburg, 149 new cases and 49 deaths; St. Petersburg, 34 new cases and 9 deaths; Havre, 8 cases and 2 deaths; Cracow, near Berlin, 11 cases and 2 deaths; Valovice, same vicinity, 4 cases and 2 deaths. September 24th—New York, 3 suspects; everybody in quarantine reported well. Hamburg, 115 new cases and 56 deaths, a marked improvement; Berlin, situation serious, the river Spree, from which the supply of water is obtained, infected with bacilli; Stettin, also, in great danger owing to the river Oder being infected; St. Petersburg, 19 new cases and 13 deaths, a marked decrease; Cracow, no new cases; Riga, 16 cases and 8 deaths; London, the captain of the Esperanza, from Manchester, was attacked with cholera an hour after arrival. September 25th—No new cases or suspects in either New York city or at quarantine. Hamburg, a marked decrease and it is confidently believed the worst is over. The London *Standard's* correspondent, at Hamburg, places the deaths from cholera to date at 9,700; the official figures, however, are given as 7,306. Paris and suburbs, 45 cases and 17 deaths; Havre, 4 cases and 5 deaths; St. Petersburg, 17 cases and 10 deaths. September 26th—New York city and quarantine practically free from cholera. The Empress of India, from Yokohama, September 19th, and due at Vancouver, B. C., October 2d, reported to have a case of cholera on board. Hamburg, Havre, Paris, Berlin, St. Petersburg, rapidly declining; Altona, 11 new cases and 7 deaths.

METEOROLOGY.

Summary for August.—*Temperature.*—Normal for the State, 72.6°; average for August, 72.4°; departure from normal, 0.2°. Highest monthly mean, 93.8°, at The Needles; lowest monthly mean, 59.8°, at Salinas. Maximum, 117°, at The Needles, on the 4th and 7th; minimum, 38°, at Nordhoff, on the 11th. Greatest monthly range, 72°, at Nordhoff; least monthly range, 14°, at Ventura.

Rainfall.—Normal for the State, .06 of an inch; average for the month, trace; departure from normal, .06 of an inch. Greatest monthly precipitation, .11 of an inch at Julian.

California—Tabular Statement for August, 1892.

STATIONS.	TEMPERATURE.						RAINFALL.		Mean Relative Humidity	WEATHER.			WIND.	FURNISHED BY—
	Mean	Highest	Lowest	Mean Highest	Mean Lowest	Mean Daily Range	No. of Days Rain Fell	Total Rainfall		No. of Clear Days	No. of Fair Days	No. of Cloudy Days	Prevailing Direction.	
Auburn ....Cal.	76.6	105.0	58.0	------	------	------	----	0.00	------	----	----	----	N. E.	Southern Pacific Company.
Berkeley .... "	59 5	89.5	51.0	69.9	54 6	14.7	0	0.00	81.6	11	5	15	S.W. & W.	Obs. University of California.
Colfax .... "	75.3	105.0	48.0	------	------	------	----	0.00	------	----	----	----	N. E.	Southern Pacific Company.
Eureka .... "	56.2	68.0	47.0	61.1	51.4	9.7	2	0.09	92.8	7	13	11	N.W.	Weather Bureau Dept. Agr.
Fresno .... "	81.4	112.0	55.0	99.4	63.5	------	0	0.00	33.8	31	0	0	N.W.	" " "
Keeler .... "	82.0	103.0	62.0	94.6	69.4	25.2	0	T.	22.4	24	6	1	S.W.	" " "
Los Angeles .... "	72.0	94.0	53.0	82.4	60.8	21.5	1	0.01	74 0	12	19	0	W.	" " "
Monterey .... "	62.4	86 0	50.0	------	------	------	----	0.00	------	----	----	----	S.	Southern Pacific Company.
Napa .... "	62.3	98.0	50.0	------	------	------	----	0.00	------	----	----	----	S.	Station Napa Insane Asylum.
Oakland .... "	64.0	88 0	51.0	73.7	54.5	19.2	0	0.00	87.0	10	16	5	W.	Chabot Observatory.
Paso Robles .... "	72.4	107.0	50.0	------	------	------	----	0.00	------	----	----	----	S.	Southern Pacific Company.
Red Bluff .... "	80.0	108.0	55.0	96.2	64.5	------	0	T.	38.2	29	0	2	S. E.	Weather Bureau Dept. Agr.
Sacramento. .... "	73.0	106.0	52 0	88.8	57.2	31.6	0	0.00	63.7	27	4	0	S.	" " "
San Bernardino "	------	------	------	------	------	------	----	------	------	----	----	----	------	A. K. Johnson, M. D
San Diego .... "	67.8	80.0	57.0	73.0	62 5	10.5	2	0.05	78.0	14	10	7	S.W.	Weather Bureau Dept. Agr.
San Francisco .. "	59.4	92.0	50 0	65.5	53.3	12 2	0	0.00	83.6	10	13	8	W.	" " "
Santa Barbara .. "	66.3	88.0	50.0	74.7	57.9	16.8	0	0.00	76.0	17	8	6	W.	Hugh D. Vail.
Santa Cruz ...... "	62.8	87.0	50.0	------	------	------	----	0.00	------	----	----	----	N.W.	W. R. Springer.
Yuma ....A. T.	90.7	114 0	66.0	------	------	------	0	T.	------	29	2	0	S.	Weather Bureau Dept. Agr.

Blank (----) indicates data missing.

Occidental Medical Times

COMMUNICATIONS are invited from all parts of the world. When necessary to elucidate the text, illustrations will be furnished without cost to the author.

SACRAMENTO: OCTOBER, 1892.

CHOLERA.

The appearance of cholera in Russia in Asia, with its rapid spread to Russia in Europe, warned all thinking persons that the whole continent of Europe was in danger of an epidemic. These fears were soon verified by the extreme rapidity of its passage along routes of travel, until Germany, Austria, France and the United Kingdom reported cases of the dread disease at widely distant points. At none does it appear to have been serious in its effects, except at Havre and Hamburg, the death-rate in the latter plague-stricken city being something unlooked for in the advanced civilization of Germany. The history of former epidemics led sanitary authorities throughout the United States to be on their guard. With the disease prevailing at seaports in constant communication with this country, and the lessened interval of time, due to faster transportation, it was quite certain that cholera would soon be brought to our doors.

These fears were realized on August 31st, when the Hamburg-American Co.'s steamship Moravia entered New York harbor and reported 22 deaths on the voyage, but no cases on board. Then followed in rapid succession the plague-stricken fleet, until several thousand persons were held in quarantine. The New York quarantine service and the city health authorities have been very generally scored for incapacity and want of precaution. On either charge we think they can afford to stand by the results achieved. Probably, 16 cases of cholera developed in the city, 8 proving fatal, and so far there have been no further cases in the United States. As for unpreparedness, there were certainly unfortunate circumstances in the management of passengers, but what health department in the country can be prepared for the general and medical care of an army of people suddenly precipitated upon it? In this emergency, the action of the Federal government was prompt, decisive, and completely successful, a promptness which State and local rights were unable to bar. We do not suppose that any conflict between the New York health department and the Federal government was seriously contemplated, but the President's decisive action speedily terminated the issue.

The public mind, which at first was greatly alarmed, has, in view of the progress of events, and the staying of the pestilence, become calmed. Should cholera now prevail throughout the United States, it will find the people and the country much better prepared to resist the invasion than two months ago. Nor has the "scare" been without its advantages. A general cleaning up was everywhere entered upon, and in many places permanent sanitary improvements were made, whose effects will be evident in the future. The direction of public attention to sanitary matters and the value of prevention will have a healthy influence with sanitary authorities everywhere. Indirectly our profession is the gainer when it is realized that quarantine stations, and State and local Boards of Health, backed by the general body of physicians, alone have stood between the people of the United States and an appalling loss of life. Putting aside the poetry and romance of heroism and self-sacrifice, which every-day experience compels us to lose sight of, the cold fact remains that preventive medicine has accomplished that which all other human science was powerless to achieve.

In view of the general interest in the subject at this time, we have devoted the present number mainly to cholera. It is not as complete as we had wished. Those capable of furnishing the required information being often too hard pressed with the business of the hour to devote more thorough attention to the subject. From some towns, even at this late day, it has been impossible to obtain data. The historical review of the only epidemic (1850) that has visited the Pacific Coast, is necessarily brief. Of the physicians who were present in that ordeal, the great majority have passed away. In San Francisco but two survive, from neither of whom could the facts be obtained. In Sacramento the sole survivor, with many years of usefulness still before him, has told the tale of the struggle "in early days." There is plenty of food for assimilation in this issue, and its perusal will help us to a better understanding of the disease. On one point we have something—less to learn than to fully realize: the absolute uselessness of various methods of disinfection commonly employed. Dr. Somers speaks truly when he says that "on the whole, fumigations by sulphur are of doubtful utility," and "more reliance should be placed on disinfectant washings than on fumigations."

Going a step further, it may be added that general cleanliness, soap, hot water, fresh air, and sunshine are all-powerful and unimpeachable disinfectants, representing as they do steps in the attainment of *asepsis*.

THE TRANSACTIONS OF THE STATE SOCIETY.

The annual volume of transactions of the Medical Society of the State of California has just been issued by the Committee on Publication. The delay is not attributable to the committee, but was caused by the continued illness of the President, who was unable to complete his list of committees until quite recently. The volume has been carefully edited and an effort made to place the papers in something more than the stereotyped order. The subject matter of the volume continues to show the improved standard noted last year. There are many good papers, most of them on special subjects, and some relating to original investigation.

The committee has "thought best" to omit the discussions this year. The manner in which former committees have obtained this valuable feature was easy and economical, and until other means were provided it would certainly have been best to render the transactions as complete as possible. Typographically there is room for much improvement in this volume; the style of the headings is, of course, a matter of taste, but there is no doubt that the press work is of inferior character. The "appendix to paper on hernia, by DR. L. BAZET," which does not appear on page 69, and does not belong to 1891, will probably be lost, as it is simply a loose folder.

The committee has again to explain the difficulties encountered through previous publication elsewheres of papers. On this occasion authors were solicited for copies of their papers by some person occupying the position of "middleman" between the author and the medical journals. It is fair to presume that he was paid for his services, and members would do well in future to bear in mind that while violating the rules of the Society they were also made a merchantable commodity.

NOTES.

Dr. J. W. Robertson.

Dr. J. W. Robertson, who for several years has had charge of the department of Meteorology in this journal, has retired from that position, desiring to identify himself only with his specialty of nervous and mental diseases. Dr. Robertson has devoted many years to meteorology, in which he has attained considerable and deserved reputation.

California Northern District Medical Society.

The second annual meeting of the California Northern District Medical Society will be held at Chico Tuesday, October 18, 1892. The following are the papers, with the names of the members presenting them: "Gynecology," by O. Stansbury, Chico; "Diseases of Children," by F. W. Benjamin, Oroville; "Obstetrics," by L. Melton, Wheatland; "Public Hygiene and Prophylaxis," by B. A. Gray, Colusa; "Practice of Medicine," by O. C. Hawkins, Biggs; "Genito-Urinary Diseases," by G. W. Stratton, Marysville; "Pneumonia," by J. T. Harris, Gridley; "Surgery," by J. E. Rodley, Chico. Physicians from the south desiring to attend should take the Oregon express on Monday evening, arriving at Chico about 2:30 A. M., Tuesday. Returning, they will leave Chico at 12:30 A. M. For further information address the Secretary, Elmer E. Stone, Marysville, Cal.

Drunk or Dying.

The uncertainty of diagnosis in head injuries has once more been illustrated by a case that recently occurred at the San Francisco Receiving Hospital. On September 3, 1892, M. C. Shaw, aged 37, a civil engineer by profession, was knocked down by a cable car. He was dazed by the blow, but seemed to recover consciousness in a few minutes. The patrol wagon was summoned, and, though he protested he was not hurt, and wanted to go home, his friends thought best to bring him to the hospital. The assistant surgeon on duty found several abrasions and contusions about the forehead, but no certain signs of serious injury. The patient, however, presented apparent symptoms of intoxication. He had walked into the hospital with a slightly unsteady gait, talked a great deal, declaring that it was nonsense to dress the abrasions on his head, took money from his pockets to pay the surgeon and steward for their trouble, and in many ways acted as an intoxicated person would. From the nature of the accident, however, the surgeon suspected that there might be internal injuries, and accordingly entered the diagnosis on the books as "doubtful." The man was placed in the hospital ward and kept for observation. He appeared to fall asleep at once, but never awoke. Six hours after entering he died. A *post-mortem* examination showed fracture at the base of the skull, in the occipital bone. The external injuries were all in the fore part of the head, and as the occipital region showed no wound, the fracture was evidently from *contre-coup*.

A Suspected Cholera Ship in San Francisco.

On September 7, 1892, the American ship Frank Pendleton arrived at San Francisco, 153 days out from Calcutta. She left that port in ballast, and proceeded to Madras, where she took aboard a cargo of old railroad iron. She then proceeded to Singapore, occupying on the voyage 112 days from Madras, and 82 days from Singapore. Two days out from Calcutta one of the sailors was taken sick with what the captain called "diarrhea." He was ill two days and then died. The first officer took charge of him, and was subsequently taken with the same symptoms, and died in about twenty hours after. The men had both been drinking to excess for several days before leaving Calcutta. The information at hand from those on board is of such a character that it is hard to come to any conclusion as to the exact nature of the sickness of these two men. The remainder of the crew entered port well, and there had been no sickness aboard since the death of the first officer, about 146 days. The ship was placed in quarantine, and fumigated with black oxide of manganese, sulphuric acid and salt, etc. Then, in order to take every precaution, everything in the way of clothing and bedding was destroyed by fire. From the information obtainable on board, Dr. Lawlor, the quarantine officer, is of the opinion owing to the condition of the men upon leaving port, that they died from acute cholera morbus. It was, however, eminently proper in view of the present condition of popular apprehension, that every precaution should be taken.

The Medical Section of the Historical Exhibit at the State Fair.

Mr. David Lubin, the indefatigable Chairman of the Historical Section of the State Agricultural Society, and its enthusiastic Secretary, Mr. J. M. Woodson, have crowned the labors of their committee with unparalleled success. Never before has there been gathered, and never again, perhaps, will there be gathered, such an array of the mementoes of the industrial, commercial, and social evolution of California as was brought together by this public-spirited committee. It constituted a grand and impressive object-lesson in the history of our State. To this exhibit Cooper Medical College, and the Medical Department of the State University, contributed liberally. The former, photographs of Prof. Henry Gibbons, Sr., of the first and of the present corps of professors, of the first graduating class, of the college building as it appeared in 1882, and also as it appeared on its completion in 1890, and a table of data relating to the organization and work of the schools. The latter, portraits of Professor Toland and of Prof. R. Beverley Cole, photographs of the present corps of professors, of the first graduating class, and a statistical table similar to that of Cooper College. Mrs. Logan contributed an excellent portrait of her husband, Dr. T. M. Logan, the scholarly organizer and first Secretary of the State Board of Health, and Mrs. Hatch an extremely life-like portrait of his worthy successor in the Board, Dr. F. W. Hatch. The Chairman of the Medical Section secured photographs of Drs. G. L. Simmons and W. R. Cluness, who more than any others have been instrumental in promoting the influence and efficiency of the Sacramento Society for Medical Improvement. A few minor things completed the medical exhibit, which, in quantity, at least, fell short of expectation. More might have been done with credit and with profit to the profession. Whatever enhances the general reputation enhances the individual reputation, and it would have been well to demonstrate that the healing art has kept pace with the development of the State in other directions.

Committees of the State Medical Society.

The following are the Standing Committees of the Medical Society of the State of California, for 1892—93:

Committee on Clinical Medicine, including Diagnostics and Therapeutics—W. G. Cochran, Los Angeles, Chairman; W. D. Anderson, Vallejo; Robert P. Smith, Jr., Santa Rosa; James Frost, San Francisco; E. J. Overend, Oakland.

Surgery and Clinical Surgery—Charles W. Nutting, Etna Mills, Chairman; J. F. Boyce, Santa Rosa; M. F. Price, Colton; Thos. W. Huntington, Sacramento; F. C. Bazan, San Francisco.

Pathology and Pathological Anatomy—F. Dudley Tait, San Francisco, Chairman; C. H. Allen, Centreville; J. H. Barbat, San Francisco; C. P. Chesley, San Francisco; A. G. Deardorff, Fresno.

Diseases of the Mind and Nervous System—G. B. Richmond, Jr., Salinas, Chairman; H. M. Rucker, Stockton; F. W. Hatch, Agnews; H. N. Winton, San Francisco; Asa Clark, Stockton.

Medical and Surgical Diseases of Children—H. M. Pond, St. Helena, Chairman; Wilbur J. Wilcox, East Oakland; Mary W. Moody, San Francisco; Edna R. Field, San Francisco; John H. Crumpton, Sausalito.

State Medicine and Hygiene, and Adulteration of Foods and Drugs—Winslow Anderson, San Francisco, Chairman; J. H. Soper, San Francisco; H. W. Smith, Placerville; L. E. Felton, Hanford; J. M. Forrest, Alturas.

Gynecology—Francis L. Haynes, Los Angeles, Chairman; Albert M. Taylor, Oakland; Lula T. Ellis, Los Angeles; P. H. Flood, San Francisco; M. A. Cachot, San Francisco.

Obstetrics and the Puerperal Diseases—L. M. F. Wanzer, Chairman; R. S. Markell, Cloverdale; F. J. White, San Rafael; Geo. W. Westlake, Red Bluff; C. M. Fenn, San Diego.

Histology and Microscopy—J. C. Spencer, San Francisco, Chairman; J. Clark, Gilroy; J. S. Sargent, Santa Rosa; K. D. Shugart, Riverside; Charles S. Cowan, Fort Jones.

Indigenous Botany, Materia Medica, Pharmacy and Medical Chemistry—W. P. Gibbons, Alameda, Chairman; J. A. McKee, Elk Grove; N. W. Mountain, Placerville; Thomas Norton, San Luis Obispo; J. A. Owen, Red Bluff.

Publication—Wm. Fitch Cheney, San Francisco, Chairman; G. W. Davis, San Francisco; G. H. Sanderson, San Francisco; Emma L. Merritt, San Francisco; Wm. Watt Kerr, San Francisco.

Medical Topography, Meteorology, Endemics and Epidemics—C. A. Ruggles, Stockton, Chairman; E. S. O'Brien, Merced; David Powell, Marysville; James P. Booth, Needles; T. E. Taggart, Delano.

Necrology—Wm. J. G. Dawson, St. Helena, Chairman; Levi H. Paty, Petaluma; Obed Harvey, Galt; C. F. Grant, Wheatland; C. D. Ball, Santa Ana.

Dermatology and Venereal Diseases—G. C. Simmons, Sacramento, Chairman; A. P. Woodward, San Francisco; E. M. Yates, Woodland; S. M. Harris, Grass Valley; O. C. Hawkins, Biggs.

Prize Essay—H. H. Hart, San Francisco, Chairman; G. W. Davis, San Francisco; R. M. Hunt, Nevada City; J. W. Stitt, Vacaville; A. H. Pratt, Oakland.

Ophthalmology and Otology—Wm. E. Hopkins, San Francisco, Chairman; F. S. Cook, San Francisco; W. A. Martin, San Francisco; Elizabeth R. C. Sargent, San Francisco; Wm. F. Southard, Oakland.

Laryngology and Rhinology—W. E. Briggs, Sacramento, Chairman; H. L. Wagner, San Francisco; A. P. Whittell, San Francisco; R. E. P. Gober, Los Gatos; Kate Post Van Orden, Alameda.

Medical Jurisprudence—C. F. Buckley, San Francisco, Chairman; E. R. Taylor, San Francisco; W. H. Mays, San Francisco; W. S. Whitwell, San Francisco; W. E. Bates, Davisville.

Medical Education and Medical Legislation—C. E. Blake, San Francisco, Chairman; W. R. Cluness, Sacramento; G. L. Simmons, Sacramento; Chester Rowell, Fresno; Geo. W. Merritt, San Francisco.

Anatomy and Physiology—A. W. Hoisholt, Stockton, Chairman; H. S. Orme, Los Angeles; J. E. Pearson, Walnut Creek; S. P. Tuggle, San Francisco; W. S. Hickman, Georgetown.

Executive Committee—R. H. Plummer, San Francisco, Chairman; J. H. Parkinson, Sacramento; Wm. B. Lewitt, San Francisco.

Arrangements—C. G. Kenyon, San Francisco, Chairman; James Simpson, San Francisco; Geo. H. Powers, San Francisco; Henry Gibbons, Jr., San Francisco; J. M. Williamson, San Francisco.

SOCIETY PROCEEDINGS.

SAN FRANCISCO COUNTY MEDICAL SOCIETY.

Regular Meeting, August 9, 1892.

The President, D. W. MONTGOMERY, M. D., in the Chair.

Report of the Committee on Ethics.—This committee, to whom was referred the charges of unprofessional conduct, brought by Dr. J. C. Sundberg against Drs. Daywalt, Clinton, Long, and LeFevre, presented the following report: The accused had all been cited to appear before the committee, and had so appeared. From its investigations the committee finds Drs. Daywalt, Clinton, Long, and LeFevre guilty as charged. The incriminating articles had been published with their knowledge, they had appeared more than once, and from the admission of two of the gentlemen charged, had been paid for. However, the accused, without exception, expressed their regret and sorrow at such publication, and affirmed that had proofs of the articles been submitted to them for revision, they would not have suffered them to appear as they did. Now, the committee, considering on the one side the accused and the charges preferred against them, as well as their expressions of repentance, and on the other side the dignity and welfare of the Society, is not willing to recommend too harsh a punishment nor discourage good resolutions; yet, recognizing the absolute necessity, if the Society is to continue to exist and command respect for all its members, to adhere strictly to the ethics governing the profession, make the following recommendation: That Dr. Geo. W. Daywalt be suspended for the period of 30 days; that Drs. Chas. A. Clinton, Seely F. Long, and J. P. LeFevre be suspended for the period of 90 days.

The report, which was signed by the full committee, was adopted by the Society.

SAN FRANCISCO SOCIETY OF EYE, EAR, NOSE AND THROAT SURGEONS.

Regular Meeting, August 26, 1892.

J. C. SUNDBERG, M. D., in the Chair.

The constitution and by-laws of the new Society were finally read.

DR. M. C. O'TOOLE demonstrated the case of a girl twelve years of age whose hard and soft palate had been almost entirely destroyed within the past few years. The diseased process had followed vaccination. He desired to know the opinion of the Society regarding the precise nature of the trouble, whether congenital syphilis or syphilitic vaccination. He stated that the case was progressing favorably under specific treatment.

The opinion of the members, as expressed, was that congenital syphilis had been the cause of the lesion.

SPECIAL CORRESPONDENCE.

BERLIN.

The Cholera Epidemic.—Theories as to its Origin in Hamburg.—Conflict between the Imperial and Local Sanitary Authorities.—Preparations and Preventive Measures in Berlin.—Number of Cases to Date.—Special Meeting of the Berlin Medical Society.—Virchow's Views on the Spread of the Disease.—Statistics of Former Epidemics.—Prognosis and Treatment in the Algid Stage.—Subcutaneous Salt Water Infusions.—Tannic Acid Enemata Harmful.—Treatment in the Premonitory and in the Typhoid Stage.—Bacteriological Diagnosis Alone Reliable.—Pfieffer's Method.—Direct Examination of the Evacuations Valueless.—Cases and their Treatment at the Moabit Hospital.—Post-mortem Appearances.

Ever since the present epidemic raging in Russia, has continued on its path westward, Germany has been on the alert, taking every sanitary precaution along its eastern borders to prevent the invasion of this undesirable guest when suddenly and unexpectedly the disease made its appearance in Hamburg, the main port of Germany, while the country lying between that city and the Russian frontier was free from infection.

Various theories have been promulgated how this came about. While many claim that Russian emigrants were the carriers of infection, this has been proven not to be the case, as the barracks in the river where these refugees are taken without being allowed to set foot in the city of Hamburg are below the city, the water supply is taken high above the city limits, and this has been found to contain the specific comma bacillus; finally, the general health in the emigrant's quarters has always been excellent. Another theory is that the infection was due to Russian vessels. The latest is that Malays, who worked as firemen on the steamers of the German East India line, brought it there. Hamburg's water supply being almost wholly taken from the river Elbe, it is at once apparent how disastrous it will be for the inhabitants when this water becomes polluted by cholera dejections thrown therein.

The war raging between the authorities of Hamburg and the imperial health officer for neglect of taking the proper sanitary measures at the right time to suppress the spread of the disease is too well know from dispatches that appeared in the daily papers, and I will only give a report of the prophylactic measures taken and the work of the hospital at Moabit, with short reports of the special meeting of the Berlin Medical Society.

As soon as Hamburg was reported to be infected all precautions were taken to prevent the disease spreading over Germany. In Berlin it was expected hourly, as the traffic between these two places is very large, both by railroad as also by boats coming up the river. The City Hospital Moabit (barrack system, thirty-one in number) contains 1,000 beds, of which 600 were immediately placed in readiness to serve as cholera stations. The patients were transferred to other hospitals, only the surgical cases being retained with a few others too ill to allow of transportation, but, if necessary, all these were to be removed at short notice to make room for cholera cases. The authorities made special inquiry into the sanitary conditions of the city. The Imperial Health Officer published notices in the daily papers and special pamphlets with directions for the safeguard of the people. The poor were furnished disinfectants with directions free of charge. When necessary houses were disinfected by the health department and every measure was taken to prevent an outbreak of cholera. To these facts it is due that the capital of Germany so far has been free from the pest, with the exception of a few cases brought from Hamburg. The public notice given by the ministry was mainly aimed to explain the character of cholera to the laity so that all might aid in taking prophylactic measures, as also to quiet the public mind and make the people acquainted with the important fact that they would run more risk of getting sick when fleeing than to remain at home where one may enjoy his usual comforts and can observe all dietetic directions.

Up to date only seven patients have been under observation in the city of Berlin that had cholera Asiatica, while over 300 had been reported as suspicious cases that afterwards proved to be only enteritis or gastro-enteritis. That so many are suffering from these latter affections is not unusual at this time of the year, and its being of a more severe type is due to the intense heat we had here, followed by moist, cool weather. At present nearly all these cases have been discharged except a few, while all are convalescent. One suspicious case died of acute dysentery; no comma bacilli were found.

There being at present vacation in all German universities, during which time medical societies also adjourn until the begining of the lectures, a special meeting of the Berlin Medical Society was called by Prof. v. Bergmann, as the president, Prof. Virchow, was in Russia; but the latter returned in time to preside at this meeting. Prof. Virchow stated that in his opinion cholera had reached its height in Russia, and was beginning to decrease without the tendency of going further westward, as the cool season had set in and acted as a check to its progress. He sanctioned the method used in the hospitals of Moscow, where the evacuations of patients are boiled prior to final disposal.

Dr. Guttmann, director of the Moabit Hospital, gave a history of cholera, which, since its first invasion in Europe, has appeared in Berlin eleven times in an epidemic form and twice (1854 and 1857) sporadically. The following table is compiled from statistics of the imperial health office by Dr. Guttmann:

Table of Comparison of all Cholera Epidemics of Berlin.

Year and duration of epidemic.	Number of patients.	Number of deaths.	Death rate of patients.	Total population.	Ratio of morbidity to population.	Ratio of mortality to population.
Aug. 31,'31 to Jan. 25,'32	2,274	1,423	62.5	229,843	1:101	1:161
Jun. 17,'32 to Mar. 14,'33	613	412	67.2	234,171	1:329	1:568
Aug. 11 to Dec. 5,'37---	3.557	2,338	65.7	265,394	1:74	1:113
July 27, to Dec. 9,'48---	2,407	1,595	66.2	400,557	1:166	1;251
May 30 to Dec. 1,'49---	5,361	3,552	66.2	401,802	1:74	1:113
Aug. 6 to Nov. 24,'50---	1,185	711	60.0	405,707	1:342	1:530
Sept. 4 to Dec. 31,52---	247	165	66.8	413,517	1:1,647	1:2,505
Aug. 7 to Nov. 30,'53---	1,405	940	66.9	415,425	1:295	1:441
July 26 to Nov. 25,'55--	2,172	1,385	63.7	419,241	1:193	1:302
June 14 to Nov. 17,'66--	8,185	5,457	66.6	658,251	1:84	1:120
July 21 to Sept. 23,'73--	788	531	67.1	927,679	1:1,177	1:1,747

As will be seen from the foregoing figures, Berlin was free from cholera epidemics for the last nineteen years, the longest time in comparison with preceding epidemics. On this occasion the disease was brought by a man from Hamburg, arriving here August 24th, at 11 P. M. He showed suspicious symptoms on arrival at the depot and was brought to the hospital; since then six more cases have been observed which can all be traced, directly or indirectly, to Hamburg.

Dr. Guttmann says when the patients are brought to the hospital in the algid stage the prognosis, from his experience during the epidemics of 1866 and 1873, is very bad. Of 1,700 patients delivered in this stage, 86.7 per cent. died. The algid stage (*stadium asphyxium*) usually sets in suddenly, after the patient has suffered for more or less time with diarrhea, with or without vomiting, to which he pays no special attention, or attributes it to some fault in diet. At first the patient feels chilly, the temperature becomes subnormal (sometimes as low as 34.5° C.), cyanosis appears, the radial pulse is low—small—sometimes not perceptible at all; stools light yellow (resembling the pea-soup stools of typhoid), very soon changing to white, or rice-water stools. The flecks of desquamated epithelium contained therein sometimes represent nothing but pure cultures of comma bacilli, and can easily be recognized by aid of the microscope. The mind is clear, but indifferent to all surroundings. The treatment in this stage is chiefly stimulants, strong wine internally, as vomiting contraindicates all medication by the mouth. Camphor and ether are given subcutaneously. Warm baths, hot bottles and blankets are applied.

The chief reliance is placed on subcutaneous salt water infusions ([1]hypodermoklysis) made alternately in the infraclavicular regions, and the anterior parts of the thighs. These infusions must be made with distilled water previously boiled, and used at the temperature of the body, or if this is subnormal, they may be given at a temperature as high as 42° C. This method was first used by Cantani during the cholera epidemic of Italy in 1884, and has since been successfully used in treating gastro-enteritis, acute dysentery, etc. It is indicated as soon as the radial pulse becomes slow, or small, which is due to dehydration of the blood, caused by the many copious watery stools. It is needless to say that this operation is to be conducted with strict antiseptic precautions. The best instrument to use is an aspirator needle of large size connected with a glass funnel by means of a rubber tube—all thoroughly sterilized. The skin is lifted and the needle pushed well into the subcutaneous cellular tissue, gradually penetrating deeper, to facilitate the flow of the liquid, care being taken at the same time that no air is introduced. The amount of liquid to be infused each time is about a quart in adults, in children 3-10 fluid ozs., and to be repeated as often as necessary. In one patient under treatment, 5½ quarts have so far been used with the best results. The value of these salt water infusions is directly observed, as the heart is stimulated, the radial pulse becomes perceptible, and the respiration gains in tonicity. While most authorities recommend a solution of chloride of sodium, 6 per mille, some add carbonate or sulphate of soda, as in the accompanying formulæ:

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[1] Vide MEDICAL TIMES, vol. VI, p. 317, on Hypodermoklysis, by Dr. Max Hildebrand.

Sod. Chlorid.	gm. 6.0	Sod. Chlorid.	gm. 5.0
Sod. Carb.	1.0	Sod. Sulph.	1.0
Aq. Dest.	1000.0	Aq. Dest.	1000.0

If it is desired to add a stimulant to the above solutions, absolute alcohol may be used, but it is more advisable to give separate hypodermic injections of camphor and ether.

Enemas to replace the fluids lost are to be strongly discouraged, as they are of no value, not being retained and only exciting peristalsis, thereby increasing the danger of exhaustion. The same remarks hold good in relation to tannic acid enemata, which of late have been recommended by eminent authorities, and is believed to have, besides its general astringent properties, a direct action on the comma bacillus. This latter assumption is unreasonable, as the large intestine is not affected, the jejunum and ileum being the seat of the disease, and an enema is arrested from further progress by the ileo-cecal valve. Does the author of this method propose to introduce a long tube through the colon and force an injection into the small intestine?

In the premonitory, or later in the typhoid stage, the tannic acid enema may be tried as in any other case of dysentery, but we can control the disease in this stage by opium and other remedies without exciting peristalsis by any kind of enema. Opium is to be administered in the typhoid stage, alone or combined with astringents, in the same manner as in typhoid fever, but in the algid stage it should not be used. If the pain becomes unbearable, a small dose of morphine may be given hypodermically. Veratrum viride, recommended by Hayem and others, can be dispensed with, as its action is not as good as camphor and ether, besides the former preparation cannot always be relied upon for efficacy.

An accurate and definite diagnosis in any case can only be made by bacteriological examination, and this is necessary for the safety of the community, and the prevention of the spread of the disease. This examination takes 40–48 hours, but the latest means by which we are enabled to recognize the comma bacilli in plate cultures takes only 20–24 hours, and was discovered by Dr. Pfeiffer, assistant to Koch, who stated the peculiarities of growth in an address delivered at the special meeting of the Berlin Medical Society, and since our attention has been directed to these facts, we have found the bacilli in all cultures made at the Moabit Hospital. Dr. Pfeiffer's observations are as follows: Cultures are exposed to a temperature of 20–24° C.; after 20–24 hours the colonies of comma bacilli have developed their characteristics so far as to be recognized with a low power of 70–90x. The colonies, after 12–18 hours, appear as minute pale drops, not perfectly round, but more or less pear shaped. In another 6 hours granulation becomes more distinct, the colony appears as composed of a heap of small glass splinters strongly refracting light, at the same time the gelatine surrounding the colony is dissolved and takes the peculiar funnel-shape, to the bottom of which the mass of bacteria sinks. It is this funnel-shaped excavation in the gelatine which allows of an early and accurate differential diagnosis by its influencing the aberration of light as if a concave lens was interposed between reflector and objective. Therefore the colony of comma bacilli appears bright star-like if the tube of the microscope is adjusted intentionally below the correct focus, while the colony is made to appear dark if the tube is elevated above focus. Colonies that have no solvent action upon the gelatine, act as convex lenses, consequently the optic impression is the reverse from the above. By adjustment of the tube below the focus these colonies appear dark, on being elevated above the correct focus, light. Dr. Pfeiffer's address is published in the *Deutsche med. Wochenschr.* No. 36, 1892.

The direct microscopical examination of the alvine dejections is never sure, owing to the possibility of confounding spirocheti with comma bacilli, and even specialists of bacteriology have to resort to the medium of plate culture on gelatine, which takes, as already stated, 24 to 48 hours. The indol reaction ($H_2 SO_4^0$ dropped on the colony suspected gives a red color) is worthless, as many other bacteria of decomposition found in the intestinal tract produce this substance.

Cases suspected to be cholera, when brought to the Moabit Hospital are isolated and receive strictly symptomatic treatment. Opium and astringents for diarrhea, nourishing liquid diet. In two cases that proved to be acute dysentery infusions of salt water had to be used for pulselessness. After diagnosis is assured they are either discharged or kept until well. If it is found to be genuine Asiatic cholera, the patient is placed in the special barracks. Nurses there have to observe all rules for disinfection before going from one patient to another. To do this a large number of nurses is required. Nurses as well as physicians going into the barracks are clad at the entrance with rubber shoes and long gowns, hands and arms bare. The treatment that has been adopted in the algid stage, and sometimes even in serious cases, especially if the frequent stools become rice water in character, is ether and camphor in oil, hypodermically, hot wines and liquors, hot bottles and warmed blankets and hot baths. Small pieces of ice are given for excessive thirst. If this stage lasts more than six hours the prognosis becomes very bad. In the typhoid stage we rely mainly on opium.

Of the seven cases admitted to the Moabit Hospital five died, the autopsy in each case giving the same results, except in one case, where the kidneys showed pathological changes, resulting from chronic parenchymatous nephritis. The anatomical diagnosis could always be expressed as acute enteritis, and the only other visible change was the viscidity and dark color of the blood. The parts of the alimentary canal showing pathological changes were exclusively the jejunum and ileum. The stomach, duodenum and large intestine being entirely free, except where the latter showed a few bloody suggillations in nearly all the cases. The mucous membrane of the jejunum and ileum are intensely swollen and of a dark pink color, there are circumscript hemorrhagic infiltrations, the vessels are strongly injected, the solitary follicles swollen to the size of pinheads, some being as large as the size of a pea, Peyers patches are swollen but pale in comparison with the surrounding mucous membrane, in which they appear deeply imbedded. Towards the ileo-cecal valve, the whole inflammatory process gains in intensity, and Peyers patches in this immediate neighborhood are reddened, then the whole pathological picture ends abruptly except for the few suggillations of the color referred to above. Microscopically the small intestines show all the characteristic signs of inflammation and denudation of epithelium. The flecks in the rice water stools, when examined, are found to be mostly desquamated epithelium, masses of bacteria and mucus.

OSCAR J. MAYER.

BERLIN, September 9, 1892.

GERMANY.

Private Hospitals in Germany.—Diagnosis and Treatment in the Berlin Clinics.—Dr. Martin's Operations: Vaginal Hysterectomy; His Methods; Other Operations.—Dr. Sänger's Method in Hysterectomy.—Dr. Schade.—Excision of the Rectum.—The Neüe Krankenhaus at Hamburg.

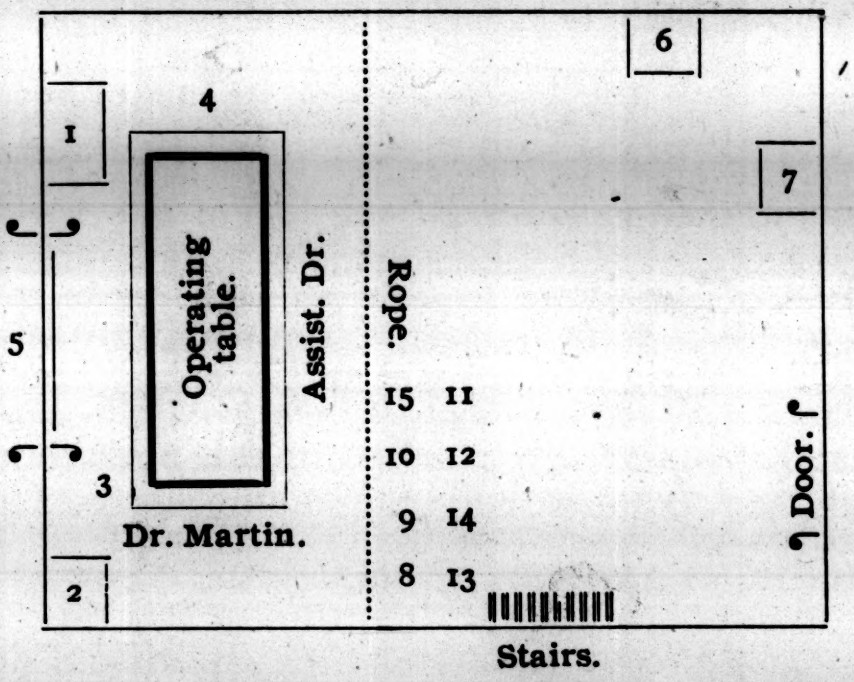
A few points from several hospitals of northern Germany may be of interest to the readers of THE MEDICAL TIMES. Leading physicians of all specialties have private hospitals, and frequently where they desire to teach, or when, owing to their reputation, young doctors wish to study with them, they carry on a clinic at their own expense among the poor, from which, as well as from their office practice, the beds of their hospitals are kept well filled. Prices in such hospitals range from one mark, fifty pf. (37½ cents) to fifteen marks ($3.75) a day. Patients who are able pay extra for surgical operations—$400 to $1,500 being the price in Berlin for hysterectomy. Patients remain an average of three weeks after a capital operation, sixteen days after a laparotomy generally. They are not expected to stay after they are able to be about, which serves as a very convenient arrangement in preventing the "gossip" of hospitals. Private patients, or rather first-class (there are four classes), have each one nurse, and are not expected to see any one of the others in the hospital. These private hospitals are fitted up with fine operating rooms, and well equipped as to latest improvements in ventilation, etc. They average about fifty patients, fourteen of which are first-class.

In the Berlin clinics I noted the careful diagnosis made of each case in gynecology. The treatment for all chronic inflammations was a small ichthyol-glycerine satchet—6 parts ichthyol to 300 of glycerine—applied without a speculum by means of a dressing forceps, reapplied every third day. For displacements massage is used, the patient on the back at first and gradually turned over to the knee chest position, the uterus being in this way brought into place, and then held so, while the patient returns to the position on the back. The heavy retroflexed uterus frequently seen a few weeks after a miscarriage or a labor is generally with seven or eight treatments by massage, and nothing else, restored to proper treatment and involution. In some cases they insert a modified Hodge's pessary to be worn between treatments, but such cases were only the chronic inflammations.

All interesting cases from the dispensary are admitted to the hospital for operation even if they pay nothing. The beds of the third-class patients are eight or ten in a room, scarce affording more than a path between each bed, and yet in such a room I saw cases on which hysterectomy had been done that morning, one suffering greatly from shock, but the other patients were talking, the room was light, and no special nurse was at hand. Some surgeons prefer to leave laparotomy cases in the operating room until after the first night.

I was fortunate in seeing Dr. Martin, of Berlin, make two vaginal hysterectomies—his great operation. At the risk of repeating the words of others who have seen him operate, a brief description of his method seems fitting. He used a short, broad speculum posterior, his patient being on the back, an assistant holding each knee, the one on the patient's left holding the speculum with one hand and a lateral retractor with the other. The operator begins behind the uterus with a knife and rapidly opens into the peritoneal cavity, and then passes in a suture with a curved needle, each stitch requiring the needle to be passed twice, so as to see clearly just what he is doing, and then tied at once, and the wound extended only as far as the tying has been done. After his first incision he uses a pair of blunt scissors. His ligatures are only of catgut, prepared for him by his head nurse and right hand assistant, Frau Honn. All his instruments are passed by her and she anticipates each step as only a well trained mind can do. The left hand assistant keeps a constant stream of 1:10,000 sublimate solution running over the parts, and no sponging is used. On Dr. Martin's left he uses two needle holders, one to reach for the needle point, but even here he worked with rapidity. He dissected off the bladder with great nicety, the spectators breathless for fear he had opened into it, but he tied his ligatures and cut the womb away, and in a few moments brought it out into the world. Then inserted a catheter and drew off six ounces of urine, demonstrating that the bladder was uninjured. Then he proceeded to sew up the opening into the peritoneum antero-posteriorly and very securely reinforcing some stitches where the raw surfaces rolled out, then cut off all the ends of the ligatures, placed a loose piece of iodoform gauze the length of the vagina and tied the knees. Her after-treatment was the same as after all abdominal sections. Nothing for twenty-four hours, except morphine hypodermically, and this in general. After twenty-four hours a teaspoonful of brandy, with as much water, once an hour or two for twenty-four hours more. The morning of the third day a cup of beef tea or milk, as patient prefers, and after that simple foodin quantity and time as she desires. Bowels moved fifth day with castor oil. In fourteen days she sits up. In the second hysterectomy the diagnosis of cancer was unmistakable in each case. Dr. Martin made an anterior and posterior colporrhaphy including the perineum after the removal of the womb.

At 7 A. M. his laparotomy operations begin. Carbolic spray is used in the operating room for two hours, the air is so charged one could scarcely take a deep inspiration; fortunately the spray is *not* used during operation. The doctor has a seat at the end of a table just long enough for the head and back of the patient, and her limbs are unsupported. This position throws the tumor forward and makes the abdomen tense, and is very convenient for fluids to run into the large tub in which the whole table stands. The operator wears a large rubber-cloth apron, the end of which he hangs over the tub so he is protected from water, but the floor is covered with water, and one stands in at least a half inch most of the time. Assistants wear rubber shoes. On the patient's right stands Frau Honn, who passes all instruments and does all the sponging. The left hand assistant, a doctor, holds the abdomen, retains intestines, and is of use in tying ligatures, etc. A rope is stretched between the visitors and those needed about the table. The room was 12 x 10, a double window in the further end before where the table stood.



1, 2—Tables for instruments and dressings.
3—Fraü Honn.
4—Anesthetizer.
5—Double window.
6, 7—Closets for special dressings and instruments for laparotomy.
8 to 15—Visitors.

Inside the rope were six persons and the patient. Outside eight visitors, by request, in wash clothes. The opportunity afforded for *witnessing* everything was the best I have ever seen in capital operations, a couple of steps being used by one or two short doctors. The first operation was a hysterectomy, finished in thirty minutes. The abdomen was opened rapidly. The mass was brought up, while the assistant held back the bowels, at the same time closing somewhat the abdominal incision. Dr. Martin beveled the uterine incisions, leaving the broad ligaments and tubes on the stump, thus avoiding hemorrhage, but carefully dissecting out all the fibroid tissue and freely curetted the cervical canal. He introduced three continuous deep silk stitches from front to back of the stump, tying the ends tightly and cutting. Over this—his only internal silk suture—he made several layers of catgut sutures, quilting in the whole and bringing the edges of the peritoneum together, the line of suture being antero-posterior. The stump now resembled in size and form a normal uterus. The broad ligaments contained several cysts, which looked like large blisters—not parovarian. "What are they?" asked Dr. Martin, the old-time "cellulitis?" He did not answer his question, but punctured each cyst, ligated the right tube near its fimbriated end, did not remove it, but did take out the ovary on that side, as it was cystic. On left side he punctured more cysts, but removed nothing. He closed the abdomen with four silk sutures through the entire wall, one and a half inches apart, and eight superficial sutures between them.

The operating table is made with a trap door, eight inches wide underneath, which is dropped for ease in cleaning the patient's back and applying the bandage. The wound is covered with four layers of iodoform gauze and a thick piece of absorbent cotton, two feet square, then bandaged on with a damp four-inch gauze bandage, which Dr. Martin applies himself around the body with the figure of 8 for each thigh. The patient's limbs had been bare during the operation, except for woolen stockings. She was removed from the room with no special protection against cold—face sweating and uncovered, the sheet-covered comforter being her only wrap. Everything is done rapidly, however.

The second case, when etherized, was again examined and operation contraindicated.

Case three was a malignant disease of the peritoneum, a large, solid mass occupying the pelvis. On opening the abdomen a large quantity of pus poured out. Two sacs were opened, flushed parts thoroughly, and closed abdomen; no drainage. The case in the corner of the room contains test tubes, which have been sterilized and are stoppered with absorbent cotton. In one of these he collected some of this pus for the pathologist. From this room he went directly to the adjoining room and made the vaginal hysterectomy with anterior and posterior colporraphy, including perineum—three hours of steady work, the only nourishment between being a tablespoonful of cognac, which he and his assistant took *once*, and which was offered the guests. Such endurance I have never seen in any operator, or such rapidity and dexterity of execution, with a staff of most able assistants. Surely he is a great man. In the same breath I must criticize his operation of amputation of the cervix. I saw him make two such operations in cases of severe double lacerations, both women being 30 years or younger. He does the operation most skilfully, and I think the lateral incision he makes as the first step of the operation, a clean sweep through the angle of the tear, is a very good suggestion in cases where the laceration extends above the vagina. He cuts freely out on the vagina, and then cuts off all the face of the cervix from the upper part of the tear, sewing over the vagina edge by a transverse row of sutures, to the internal os; then two or three stitches at each angle to unite the cuts he made on the side. and it is done, but there is a womb with no cervix. In displacements how is it to be righted, or held up? How is dilatation to go on in the next labor? What of the nervous disturbance from the removal of so much tissue? I find that he is severely criticized in this operation by his neighbors in Berlin, and that his defense is that he does not believe it is possible to cure the coëxisting metritis of these cases in any other way; but he never uses any preliminary treatment, as American gynecologists do, to get the best results possible from the Emmet operation. Curetting at the time of operation, and the injection of a 10 per cent. solution of perchloride of iron into the body being his routine treatment.

In Leipsic I had the good fortune to see Dr. Sänger make a hysterectomy. The main points were that the patient was placed in the Trendelenburg position in order to get the intestines out of the way. The mass removed was very large—eight pounds—so the incision extended three inches above the umbilicus and down to the pubis. He fastened together with three double vulsella the upper part of the incision, covering the intestines with three pieces of gauze and bringing the end of it out between each vulsellum. He uses no sponges, but has two sizes of gauze pads—one a foot square, four thicknesses basted together, the edges raw; the other size is one-half as large, and unfolded, that is, two feet by one foot, single thickness. The gauze is boiled in a weak soda solution, then sterilized in cans, dry. He dips it himself in hot sterilized water if he wishes it moist. The assistant stands opposite the operator and to his left, with two cans of this gauze, which no one touches but the operator, and then he throws it in a pail under the table. The asepsis was perfect, as far as one could learn, and his results are most remarkable. He used an elastic ligature around the stump and ligated the broad ligaments by several stitches. The left side was difficult to control entirely, but he was persistent in tying till the oozing ceased. He used the thermo-cautery freely in the cervical canal, and then curetted out the burned tissue before putting in the three fine silk deep sutures, which he used to close the canal and the deeper parts of the stump, and over this a row of sutures. His mode of closing the stump was a lateral line of incision, and the peritoneum he united with Lembert's suture. A most painstaking, deliberate operator, but one is greatly impressed that a master hand and head is working. Ether is given with a wire mask the size of the face, one drachm at a time.

In Hamburg Dr. Schade made an operation for cancer of the rectum. The colotomy was performed eight days previously. He placed the hips of the patient above the edge of an eight-inch-wide leaf of the operating table, which was at an angle of 35 degrees, a small pillow filling the hollow of the back, and his instruments lying on the flat surface of the table below the leaf. He stood during the operation, over two and one-half hours. The whole sacrum was above the edge of the table. Dr. Schade shaved the parts himself. His assistant bathed them and the vagina with a bichloride solution, and then Dr. Schade wiped all the skin with ether just before making his incision. His incision commenced one inch behind the rectum and was four inches long. He carefully dissected around the coccyx and lower end of the sacrum, a piece of which (nearly three inches) he removed without opening into the peritoneum. Then he tied every bleeding point with catgut, dissected round the rectum, ligating bands which could not be torn apart, and put on clamps about two inches above the anus, below the cancerous mass. He severed the band between the clamps, and then used the clamp on the upper portion as a handle to the bowel in his high dissection. His next step was carefully to sew the peritoneum to the healthy bowel. Then he cut above the diseased mass, then thoroughly flushed the parts and ligated all bleeding vessels around the cut end of the bowel. He then removed the clamp from the anal portion of the bowel. There was considerable bleeding, which was most thoroughly controlled with ligatures, the parts flushed from the anus, and the two segments of the bowel brought together with simple interrupted sutures, one set of stitches of No. 2 catgut carried through the bowel half an inch from the cut, and the alternate stitch of No. 1 catgut submucous. He began in the middle of the back part of the bowel, and left each ligature four inches long, after tying as a handle, till others were introduced, when the first ones were cut off. He thus sewed clear round the bowel, and afterwards put in some external stitches to reinforce the inner row. Then he packed the pelvis loosely all around the bowel with iodoform gauze in strips, put in a couple of stitches at either end of the external wound to limit its extent, and laid the patient on her side in bed. The loss of blood was very slight, and the woman, who was 46 years old and of slight build, bore the operation very well, and two days later was progressing favorably. Dr. Schade told me he had been very successful in previous operations of this kind, and in a month would close the inguinal opening.

The neüe Krankenhaus is the finest hospital I have so far seen in Europe. Built within two years, at a cost of $2,000,000, it accommodates 1,600 patients and has a staff of 400 employes, thirty of whom are resident physicians, mostly without salary, or a very small one. I should like to give you many of the details of its management, as I learned them in a forenoon of inspection with the intelligent librarian, but a book describing it all has been published and would be most valuable reading for our officials who manage large California general hospitals. Fifty cents a day is the lowest price for each patient, and societies, or the city government, or generous individuals are obliged to pledge that for each case. The porches and grounds of the hospital yard should be especially mentioned for their beauty and good order.

CHARLOTTE B. BROWN.

MUNICH, August 25, 1892.

REVIEWS AND NOTICES.

DISEASES OF THE URINARY APPARATUS; PHLEGMASIC AFFECTIONS. By John S. Gouley, M. D., Surgeon to Bellevue Hospital. New York: D. Appleton & Co.; pp. xiv-342.

This book comprises twelve lectures, which, after publication in the *New York Medical Journal*, have been revised and republished in volume form. No more exhaustive treatise upon this subject is to be had than that of Dr. Gouley. The chief excellence of the work lies in its explicitness and systematic attention to details in those portions devoted to treatment. As a most excellent example of this the reader is referred to the treatment of gonorrhea. The author has not hesitated to attack old and so called respectable plans of dealing with urethritis. He boldly eliminates the balsamic preparations, as not only useless, but absolutely harmful, and substitutes for them a plan that is at once sensible and efficient. It is fair to assume that even the more experienced practitioner will obtain from this source many new and valuable suggestions upon this much vexed question. We believe that the work will meet with a hearty reception from the medical profession.

MEDICAL NEWS.

LICENTIATES OF THE BOARD OF EXAMINERS.

At a meeting of the Board of Examiners, held Sept. 6, 1892, the following physicians having complied with the law and the regulations of this Board, were unanimously granted certificates to practise medicine and surgery in this State:

Walter Davidson Bidwell, Oakland; Harvard Univ. Med. School, Mass., June 24,'85.
Charles Robert Blake, San Francisco; Med. Dept. Univ. California, Nov. 10,'91.
Thomas Francis Brennan, San Francisco; Univ. Med. Coll., Mo., Mar. 14,'91.
Walton Todd Burres, Stockton; Med. Dept. Tulane Univ., La., Apr. 6,'92.
Starr King Church, Fresno; Med. Dept. Univ. Michigan, June 30,'92.
David William Edelman, Los Angeles; Univ. City N. S. Med. Dept., N. Y., Mar. 24,'91.
Eugene Nesbit Freeman, Grafton; Vanderbilt Univ., Tenn., Mar. 1,'85.
Edward Lagan, San Francisco; Med. Dept. Univ. California, Nov. 10,'91.
Eugene Le Baron, San Bernardino; Univ. Maryland, Baltimore, Md., Apr. 14,'92.
Avery Barnes McGill, San Francisco; Univ. City New York, Med. Dept., Mar. 29,'92.
Henry Gordan McGill, San Francisco; Univ. City New York, Med. Dept., Mar. 29,'92.
Edwin T. Painter, Banning; Coll. Phys. and Surg., New York, Mar. 12,'85.
Ramon Rola, Santa Clara; Univ. Barcelona, Spain, June 27,'89.
Gottfried A. Shelling, Los Angeles; Med. Coll. Univ. So. California, May 25,'92.
O. W. Sinclair, Eureka; Univ. City New York, Mar. 12,'89; Univ. of McGill, Canada, Apr. 1,'91.
James Stoddart (2d certificate), San Jose; The Univ. of Edinburgh, Scotland, Aug. 1,'92.
O. Van Vestrant, Gardena; Royal Coll. Phys. and Royal Coll. Surg., Edinburgh, Scotland, July 28,'85.
James K. Warner, San Francisco; Med. Dept. Univ. California, Nov. 10,'91.
Foster E. Wilson, Lancaster; Cincinnati Coll. Med. and Surg., O., Feb. 24,'77.

CHAS. C. WADSWORTH, Secretary.

Official List of Changes in the Stations and Duties of Officers serving in the Medical Department of the U. S. Army (Division of the Pacific), from August 21, 1892, to September 20, 1892.

During the absence of the Medical Director of the Department, Captain William L. Kneedler, assistant surgeon, will, in addition to his present duties, take charge of the office of the Medical Director, and perform the duty of attending surgeon in this city. Par. 2, S. O. 94, Dept. of California, Sept. 5, 1892.

The journey performed by Captain William W. Gray, assistant surgeon, from Wardner to Fort Sherman, Idaho, and return, on public business, in obedience to S. O. 29, c. s., Hdq. U. S. troops, Wardner, Idaho, is confirmed. Par. 4, S. O. 135, Dept. of the Columbia, Sept. 9, 1892.

The journeys performed by Captain R. R. Ball, assistant surgeon, from Fort Townsend to Seattle, Wash., and return, on August 4, 10, 18, 25 and 30, 1892, on public business in connection with the examination of recruits, in obedience to instructions from these headquarters dated April 5, 1892, are confirmed. Par. 1, S. O. 134, Dept. of the Columbia, Sept. 6, 1892.

Captain Richard W. Johnson, assistant surgeon, is relieved from duty at Fort Bayard, N. M., and ordered to Fort Bowie, A. T., for duty at that station, relieving First Lieut. Philip G. Wales, assistant surgeon.

Lieut. Wales, on being relieved by Captain Johnson, is ordered to Fort Bayard, N. M., for duty at that station.

First Lieut. Paul Shillock, assistant surgeon, now on temporary duty at San Carlos, A. T., is relieved from duty at Fort Grant, A.T., and assigned to permanent duty at San Carlos, A.T., relieving First Lieut. Nathan S. Jarvis, assistant surgeon.

Lieut. Jarvis, on being relieved by Lieut. Shillock, is ordered to Fort Apache, A. T., for duty, relieving Captain Louis M. Maus, assistant surgeon. Captain Maus, on being relieved by Lieut. Jarvis, is ordered to Whipple Barracks, A. T., for duty,

By direction of the Acting Secretary of War, so much of Par. 9, S. O. 194, A. G. O., as relates to change of station of Captain Louis M. Maus, assistant surgeon, is suspended until further orders.

ITEMS.

Dr. G. F. G. Morgan has removed from Clements, San Joaquin Co., to Maxwell, Colusa Co., Cal.

An Army Medical Board will be in session in New York City, during October, 1892, for the examination of candidates for appointment to the Medical Corps of the United States Army to fill existing vacancies. The candidate must be between 21 and 28 years of age, and a graduate from a regular Medical College, as evidence of which, his diploma must be submitted to the board. Further information regarding the examinations may be obtained by addressing the Surgeon General U. S. Army, Washington, D. C.